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NRCS Natural Resources Conservation Service

United States Department of Agriculture

Washington Water Supply Outlook Report February 1, 2003

Water Supply Outlook Reports
and
Federal - State - Private
Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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Washington
Water Supply Outlook

February 2003

General Outlook

Above average January precipitation brought much need relief to most of Washington. However with average temperatures remaining 4-7 degrees above normal and minimum temperatures holding 3-9 degrees above normal, most of the precipitation came as rain. Mountain snowpack conditions remain well below average in most river basins with only a few on the eastside maintaining near average levels. Manual snow surveys also indicated frozen soil conditions and ice layers in the snowpack at many locations. This verifies previous suspicions of multiple rain-on-snow and thaw-freeze events. Frozen ground and ice layers can often cause problems with flash melt-off and reduced ground water recharge.

Snowpack

The February 1 statewide SNOTEL readings remained much below average at only 65%. The Tolt River Basin snow surveys reported the lowest readings at 6% of average. Snow surveys in the Omak Creek Basin reported the highest at 130% of average. Westside averages from SNOTEL, and February 1 snow surveys, included the North Puget Sound river basins with 55% of average, the Central Puget river basins with 30%, and the Lewis-Cowlitz basins with 50% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 75% and the Wenatchee area with 93%. Snowpack in the Spokane River Basin was at 49% and the Walla Walla River Basin had 49% of average. Maximum snow cover in Washington was at Lyman Lake SNOTEL in the Chelan River Basin, with water content of 35.5 inches. This site would normally have 43.4 inches of water content on February 1. Last year at this time Lyman Lake had 49.2 inches of snow water. The highest average in the state was Moses Peak snow course near Omak with 208% of average.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	39	49
Newman Lake	43	72
Pend Oreille	76	69
Okanogan	75	77
Methow	88	89
Similkameen	47	38
Wenatchee	75	76
Chelan	66	77
Upper Yakima	62	67
Lower Yakima	67	77
Ahtanum Creek	79	92
Walla Walla	41	49
Lower Snake	62	74
Cowlitz	53	57
Lewis	28	42
White	62	75
Green	38	45
Puyallup	60	75
Cedar	20	30
Snoqualmie	36	38
Skykomish	35	44
Skagit	63	70
Baker	39	57
Nooksack	35	38
Olympic Peninsula	61	68

Precipitation

During the month of January, the National Weather Service and Natural Resources Conservation Service climate stations reported varying precipitation totals throughout Washington river basins. The highest percent of average in the state was at Mill Creek Dam, WA. Mill Creek Dam reported 250% of average for a total of 5.49 inches. The average for this site is 2.2 inches for January. The wettest spot in the state was reported at June Lake SNOTEL with a January accumulation of 79.8 inches, about 15 inches below the 30-year average for the site. Basin averages for the water year rebounded with above average January precipitation. The Okanogan - Methow river basins reported the highest at 100% and the Upper Yakima and Central Puget reported the lowest at 72% of average. All basins increased exponentially from last month's report.

RIVER BASIN	JANUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	117	78
Colville-Pend Oreille	118	94
Okanogan-Methow	138	100
Wenatchee-Chelan	142	84
Upper Yakima	138	72
Lower Yakima	154	93
Walla Walla	142	84
Lower Snake	122	85
Cowlitz-Lewis	126	84
White-Green-Puyallup	118	73
Central Puget Sound	132	72
North Puget Sound	125	78
Olympic Peninsula	118	94

Reservoir

Seasonal reservoir levels in Washington vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation and flood control. Reservoir storage in the Yakima Basin was 368,800-acre feet, 83% of average for the Upper Reaches and 132,500-acre feet, 109% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 39% of average for February 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 142,500 acre feet, 123% of average and 60% of capacity; Chelan Lake, 314,100 acre feet, 100% of average and 46% of capacity; and the Skagit River reservoirs at 109% of average and 78% of capacity. Several reservoirs experienced sharp increases in storage due to warmer than average temperatures with rain and unexpected snowmelt.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	60	123
Colville-Pend Oreille	91	113
Okanogan-Methow	28	39
Wenatchee-Chelan	46	100
Upper Yakima	44	83
Lower Yakima	57	109
North Puget Sound	78	109

For more information contact your local Natural Resources Conservation Service office.

Streamflow

February forecasts vary from 100% of average for Salmon Creek near Conconully to 43% of average for Mill Creek at Walla Walla. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 75%; Green River, 75%; and Skagit River, 72%. Some Eastern Washington streams include the Yakima River near Parker, 73%: Wenatchee River at Plain, 68%; and Spokane River near Post Falls, 54%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Statewide January streamflows varied from much below to above average. Most of which came off the last few days of the month due to heavy rains and melting snow. Some localized flooding was reported on the westside on two different occasions. The Bumping River near Nile had the highest reported flows with 177% of average. The Snake River below Ice Harbor Dam with 55% of average, was the lowest in the state. Other streamflows were the following percentage of average: the Cowlitz, 96%; the Spokane at Spokane, 85%; the Columbia below Rock Island Dam, 80%; and the Cle Elum near Roslyn, 109%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	54-58
Colville-Pend Oreille	65-84
Okanogan-Methow	63-100
Wenatchee-Chelan	65-77
Upper Yakima	67-70
Lower Yakima	61-77
Walla Walla	43-71
Lower Snake	66-72
Cowlitz-Lewis	61-79
White-Green-Puyallup	75
Central Puget Sound	71-75
North Puget Sound	71-77
Olympic Peninsula	78-80

STREAM	PERCENT OF AVERAGE JANUARY STREAMFLOWS
Pend Oreille Below Box Canyon	79
Kettle at Laurier	59
Columbia at Birchbank	78
Spokane at Long Lake	77
Similkameen at Nighthawk	57
Okanogan at Tonasket	62
Methow at Pateros	68
Chelan at Chelan	97
Wenatchee at Pashastin	74
Yakima at Cle Elum	102
Yakima at Parker	108
Naches at Naches	114
Grande Ronde at Troy	65
Snake below Lower Granite Dam	74
SF Walla Walla near Milton Freewater	129
Columbia River at The Dalles	76
Lewis at Ariel	135
Cowlitz below Mayfield Dam	96
Skagit at Concrete	124

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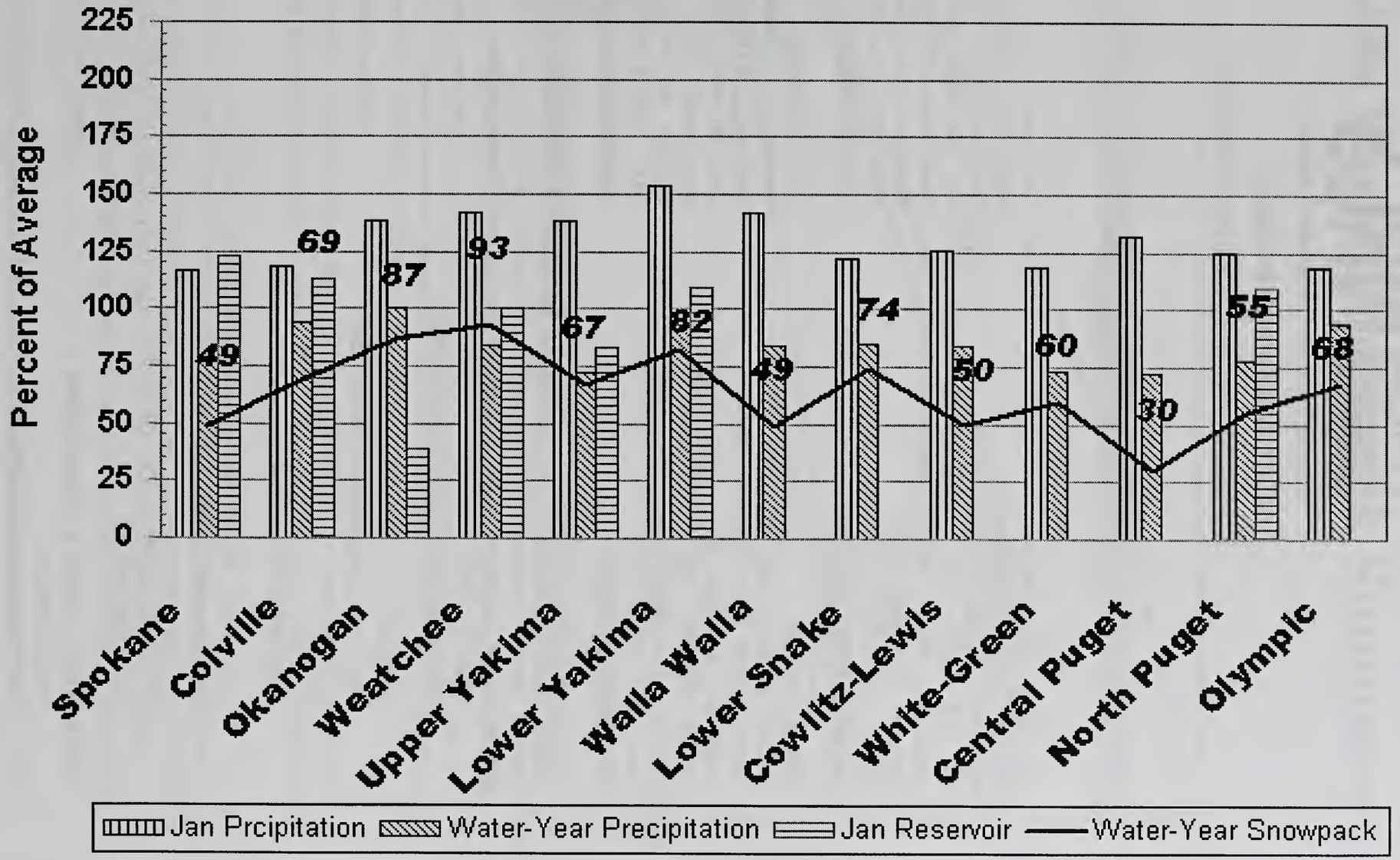
BASIN SUMMARY OF SNOW COURSE DATA

FEBRUARY 2003

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ABERDEEN LAKE CAN.	4000	1/28/03	12	2.5	3.5	4.7
AHTANUM R.S.	3100	2/03/03	18	6.0	5.7	7.1
ALPINE MEADOWS SNTL	3500	2/01/03	---	3.1	47.4	29.2
ASHLEY DIVIDE	4820	1/28/03	10	1.8	4.9	5.1
BADGER PASS SNOTEL	6900	2/01/03	---	13.0	21.6	22.3
BARKER LAKES SNOTEL	8250	2/01/03	---	7.3	5.8	9.2
BASIN CREEK SNOTEL	7180	2/01/03	---	4.1	3.5	4.9
BEAVER CREEK TRAIL	2200	1/28/03	21	8.9	11.0	10.3
BEAVER PASS	3680	1/29/03	40	13.9	23.4	19.3
BERNE-MILL CREEK (d)	3170	2/02/03	51	13.9	21.3	20.2
BIG WHITE MTN CAN.	5510	2/03/03	42	10.8	15.0	13.4
BLACK PINE SNOTEL	7100	2/01/03	---	6.4	4.7	8.0
BLEWETT PASS #2	4270	1/29/03	34	10.8	11.0	11.5
BLEWETT PASS#2SNOTEL	4270	2/01/03	34	9.8	10.0	12.4
BRIEF	1600	1/30/03	25	6.9	4.3	6.0
BROWN TOP AM	6000	1/27/03	87	30.0	52.2	42.5
BUMPING LAKE (NEW)	3400	1/29/03	44	12.2	14.9	13.3
BUMPING RIDGE SNOTEL	4600	2/01/03	---	13.9	25.1	19.4
BUNCHGRASS MDWSNOTEL	5000	2/01/03	---	19.9	23.7	18.6
CAYUSE PASS	5300	2/01/03	---	36.0E	60.9	54.7
CHESSMAN RESERVOIR	6200	1/30/03	4	1.0	.6	2.5
CHICKEN CREEK	4060	1/30/03	35	8.8	10.6	11.5
CHIWAUKUM G.S.	2500	2/02/03	24	6.2	7.3	8.6
CLOUDY PASS AM	6500	2/01/03	---	22.5E	33.6	29.5
COLOCKUM PASS	5370	1/28/03	39	12.1	12.1	11.7
COMBINATION SNOTEL	5600	2/01/03	---	4.0	2.1	3.4
COPPER BOTTOM SNOTEL	5200	2/01/03	---	5.4	8.3	8.0
COPPER MOUNTAIN	7700	1/25/03	21	3.5	5.8	7.0
CORRAL PASS SNOTEL	6000	2/01/03	---	16.2	29.7	22.1
COUGAR MTN. SNOTEL	3200	2/01/03	0	.0	15.3	13.7
COX VALLEY	4500	1/27/03	43	15.7	27.8	24.2
COYOTE HILL	4200	1/31/03	16	3.6	5.0	7.3
DALY CREEK SNOTEL	5780	2/01/03	---	6.8	5.1	7.4
DEVILS PARK	5900	1/27/03	61	18.8	39.0	30.7
DISCOVERY BASIN	7050	1/28/03	26	5.4	4.4	6.6
DIX HILL	6400	2/02/03	23	4.6	5.0	7.6
DOMMERIE FLATS	2200	1/30/03	16	5.4	7.2	6.4
EAST RAGGED SADDLE	3740	2/02/03	21	8.2	22.8	14.6
EASY PASS AM	5200	2/01/03	---	33.0E	70.0	46.2
ELBOW LAKE SNOTEL	3200	2/01/03	18	7.8	32.9	20.4
EMERY CREEK SNOTEL	4350	2/01/03	---	7.5	8.6	10.5
ENDERBY CAN.	5800	1/29/03	71	21.7	29.4	27.2
FARRON CAN.	4000	2/03/03	31	8.3	8.2	8.7
FISH CREEK	8000	1/28/03	19	4.0	4.0	5.8
FISH LAKE	3370	1/29/03	47	14.8	28.2	24.5
FISH LAKE SNOTEL	3370	2/01/03	48	15.1	20.6	24.7
FLATTOP MTN SNOTEL	6300	2/01/03	---	25.8	33.1	31.8
FOURTH OF JULY SUM	3200	1/30/03	8	1.0	11.3	7.1
FREEZEOUT CK. TRAIL	3500	1/28/03	16	5.0	7.1	8.8
FROHNER MDWS SNOTEL	6480	2/01/03	---	4.5	2.7	5.0
GOAT CREEK	3600	1/28/03	23	5.5	3.9	5.1
GRASS MOUNTAIN #2	2900	2/01/03	---	.0E	12.7	7.5
GRAVE CRK SNOTEL	4300	2/01/03	---	9.3	10.8	11.7
GREEN LAKE	6000	2/01/03	---	17.0E	27.0	23.1
GREEN LAKE SNOTEL	6000	2/01/03	---	14.1	18.7	15.4
GREYBACK RES CAN.	4700	1/30/03	20	6.1	7.7	6.3
GROUSE CAMP SNOTEL	5380	2/01/03	---	14.7	17.4	14.0
HAMILTON HILL CAN.	4550	2/02/03	20	4.3	7.6	10.0
HAND CREEK SNOTEL	5030	2/01/03	---	4.9	6.7	8.6
HARTS PASS SNOTEL	6500	2/01/03	67	21.0	29.6	31.3
HELL ROARING DIVIDE	5770	1/30/03	52	20.7	20.2	20.7
HERRIG JUNCTION	4850	1/30/03	53	15.2	19.9	18.1
HIGH RIDGE SNOTEL	4980	2/01/03	---	8.1	19.9	16.9
HOLBROOK	4530	1/29/03	10	2.0E	6.5	7.2
HOODOO BASIN SNOTEL	6050	2/01/03	---	20.1	32.9	30.1
HUMBOLDT GLCH SNOTEL	4250	2/01/03	---	2.2	12.6	9.5
HURRICANE	4500	1/31/03	14	4.5	14.0	11.7
INTERGAARD	6450	1/28/03	16	3.2	2.0	4.8
ISINTOK LAKE CAN.	5100	1/31/03	13	2.2	4.3	5.2
JUNE LAKE SNOTEL	3200	2/01/03	---	5.6	48.5	28.4
KELLER RIDGE	3700	1/29/03	18	4.0	33.3	--
KELLOGG PEAK	5560	1/30/03	33	10.2	--	20.7
KRAFT CREEK SNOTEL	4750	2/01/03	---	7.3	8.7	10.9
LESTER CREEK	3100	2/01/03	---	6.5E	16.8	14.2
LOLO PASS SNOTEL	5240	2/01/03	56	16.9	18.6	20.9
LONE PINE SNOTEL	3800	2/01/03	---	11.7	40.9	24.1
LOOKOUT SNOTEL	5140	2/01/03	38	11.2	27.0	21.5
LOST HORSE MTN CAN.	6300	2/02/03	14	2.0	5.7	6.5
LOST HORSE SNOTEL	5000	2/01/03	35	12.7	17.0	13.1
LOST LAKE SNOTEL	6110	2/01/03	---	20.8	47.4	40.6
LUBRECHT FOREST NO 3	5450	1/29/03	9	1.6	3.0	4.6
LUBRECHT FOREST NO 4	4650	1/29/03	4	1.0	1.3	2.5
LUBRECHT FOREST NO 6	4040	1/29/03	6	1.2	2.0	2.8
LUBRECHT HYDROPLOT	4200	1/29/03	9	2.1	3.1	4.2
LUBRECHT SNOTEL	4680	2/01/03	---	3.4	3.5	4.2
LYMAN LAKE SNOTEL	5900	2/01/03	---	35.5	49.2	43.4
MARIAS PASS	5250	1/30/03	22	4.6	10.6	11.7
MCCULLOCH CAN.	4200	1/31/03	16	2.8	4.7	4.9
MEADOWS CABIN	1900	1/29/03	4	.6	5.0	5.0
MEADOWS PASS SNOTEL	3240	2/01/03	---	8.0	29.7	19.1
MERRITT	2140	2/02/03	30	7.8	10.8	11.7
MICA CREEK SNOTEL	4750	2/01/03	24	9.2	22.3	18.3
MISSEZULA MTN CAN.	5080	2/02/03	12	2.4	5.4	6.5
MISSION RIDGE	5000	1/31/03	40	13.0	13.3	11.9
MORRISSEY RIDGE CAN.	6100	2/01/03	---	13.0	18.5	40.3
MORSE LAKE SNOTEL	5400	2/01/03	---	33.1	41.0	36.9
MOSES MOUNTAIN (2)	4800	1/28/03	37	10.0	10.6	12.0
MOSES MTN SNOTEL	4800	2/01/03	---	11.5	11.8	10.4
MOSES PEAK	6650	1/28/03	60	20.0	17.1	9.6
MOSQUITO RDG SNOTEL	5200	2/01/03	---	18.0	28.2	24.6
MOULTON RESERVOIR	6850	1/28/03	20	4.3	3.0	5.2
MOUNT CRAG SNOTEL	4050	2/01/03	42	17.4	22.1	19.3
MT. KOBAU CAN.	5500	2/01/03	33	9.0	8.6	7.9
MOUNT TOLMAN	2000	1/27/03	10	3.0	3.0	3.6
MOUNT GARDNER SNOTEL	2860	2/01/03	---	1.9	19.4	12.0
MUTTON CREEK #1	5700	1/31/03	41	11.4	11.7	9.4
N.F. ELK CR SNOTEL	6250	2/01/03	---	6.1	6.4	8.0
NEW HOZOMEEN LAKE	2800	1/28/03	15	4.2	6.7	7.8
NEZ PERCE CMP SNOTEL	5650	2/01/03	---	8.3	9.3	9.9
NOISY BASIN SNOTEL	6040	2/01/03	---	19.3	26.9	27.0
OLALLIE MDWS SNOTEL	3960	2/01/03	---	19.6	39.9	39.2
OLALLIE MEADOWS	3630	2/01/03	---	15.0E	28.0	27.4
OPHIR PARK	7150	2/02/03	32	7.2	7.0	10.6
PARADISE PARK SNOTEL	5500	2/01/03	---	23.9	57.4	48.1
PARK CK RIDGE SNOTEL	4600	2/01/03	80	26.7	43.0	35.0
PETERSON MDW SNOTEL	7200	2/01/03	---	6.0	3.1	6.1
PIGTAIL PEAK SNOTEL	5900	2/01/03	71	27.1	41.8	34.3
PIKE CREEK SNOTEL	5930	2/01/03	---	10.0	15.0	17.8
PIPESTONE PASS	7200	1/26/03	10	2.0	2.0	3.2
POPE RIDGE SNOTEL	3540	2/01/03	51	14.7	12.3	14.9
POSTILL LAKE CAN.	4200	1/30/03	14	3.0	5.7	5.8
POTATO HILL SNOTEL	4500	2/01/03	---	10.7	27.2	18.5
QUARTZ PEAK SNOTEL	4700	2/01/03	---	11.1	22.8	15.4
RAGGED RIDGE	3330	1/29/03	8	2.9	9.5	--
RAINY PASS SNOTEL	4780	2/01/03	55	25.5	32.0	30.2
REX RIVER SNOTEL	1900	2/01/03	---	3.0	35.0	21.7
ROCKER PEAK SNOTEL	8000	2/01/03	---	7.0	6.1	9.1
RUSTY CREEK	4000	1/31/03	27	6.6	3.3	4.9
SF THUNDER CK AM	2200	2/01/03	---	2.5E	8.2	5.9
SADDLE MTN SNOTEL	7900	2/01/03	---	7.7	15.8	17.3
SALMON MDWS SNOTEL	4500	2/01/03	36	9.3	7.7	7.5
SASSE RIDGE SNOTEL	4200	2/01/03	45	17.2	--	23.8
SAVAGE PASS SNOTEL	6170	2/01/03	60	16.7	16.6	17.6
SAWMILL RIDGE	4700	2/01/03	---	16.0E	21.8	22.9
SCHREIBERS MDW AM	3400	2/01/03	---	13.0E	45.0	32.4
SHEEP CANYON SNOTEL	4050	2/01/03	---	2.5	--	23.9
SHERWIN SNOTEL	3200	2/01/03	---	1.8	12.3	8.4
SILVER STAR MTN CAN.	5600	1/28/03	46	14.1	25.5	20.0
SKALKAHO SNOTEL	7260	2/01/03	---	13.5	15.0	16.0
SKOOKUM CREEK SNOTEL	3920	2/01/03	---	.0	--	20.2
SOURDOUGH GULCH SNTL	4000	2/01/03	0	.0	1.0	--
SPENCER MDW SNOTEL	3400	2/01/03	---	8.2	--	21.9
SPIRIT LAKE SNOTEL	3100	2/01/03	---	.1	--	--
SPOTTED BEAR MTN.	7000	1/29/03	24	5.4	7.1	10.1
SOURDOUGH GULCH SNTL	4000	2/01/03	0	.0	1.0	--
STAHL PEAK SNOTEL	6030	2/01/03	---	19.9	26.4	24.1
STAMPEDE PASS SNOTEL	3860	2/01/03	44	17.8	38.4	31.0
STEMILT SLIDE	5000	1/28/03	23	7.0	9.6	10.4
STEVENS PASS SNOTEL	4070	2/01/03	57	17.8	29.7	30.2
STEVENS PASS SAND SD	3700	2/02/03	54	15.5	26.7	24.0
STORM LAKE	7780	1/28/03	29	6.1	5.2	8.3
STRYKER BASIN	6180	1/30/03	56	17.6	25.0	21.3
SUMMERLAND RES CAN.	4200	1/30/03	16	2.6	5.8	6.9
SUNSET SNOTEL	5540	2/01/03	---	7.0	15.2	20.9
SURPRISE LKS SNOTEL	4250	2/01/03	---	19.6	40.1	32.2
TEN MILE LOWER	6600	1/30/03	17	3.4	2.4	4.7
TEN MILE MIDDLE	6800	1/30/03	22	4.2	4.5	7.1
THUNDER BASIN	4200	1/29/03	36	10.8	16.2	14.5
TINKHAM CREEK SNOTEL	3000	2/01/03	---	9.4	27.2	22.7
TOGO	3370	1/31/03	21	5.6	8.6	7.4
TOUCHET SNOTEL	5530	2/01/03	29	12.0	29.0	23.8
TRINKUS LAKE	6100	1/29/03	62	18.0	24.6	26.6
TROUGH #2 SNOTEL	5310	2/01/03	36	11.5	8.1	7.5
TRUMAN CREEK	4060	2/02/03	6	2.2	2.9	3.5
TUNNEL AVENUE	2450	2/03/03	26	8.7	17.8	14.8
TV MOUNTAIN	6800	1/29/03	27	6.3	11.1	12.0
TWELVEMILE SNOTEL	5600	2/01/03	---	8.9	12.0	12.8
TWIN LAKES	2700	1/30/03	21	6.0	6.4	5.4
TWIN LAKES SNOTEL	6400	2/01/03	---	21.9	29.5	27.5
TWIN SPIRIT DIVIDE	3480	2/02/03	13	4.0	19.4	10.5
UPPER HOLLAND LAKE	6200	1/29/03	51	14.4	21.6	23.7
UPPER WHEELER SNOTEL	4400	2/01/03	30	10.2	7.8	9.2
WARM SPRINGS SNOTEL	7800	2/01/03	---	12.4	11.6	13.8
WEASEL DIVIDE	5450	1/29/03	43	13.5	24.0	21.5
WELLS CREEK SNOTEL	4200	2/01/03	37	12.6	24.6	--
WHITE PASS ES SNOTEL	4500	2/01/03	39	12.0	18.3	17.1

February 1, 2003 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2002 - Current Date)



USDA NRCS
Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow/snow.htm

Oregon:
http://www.or.nrcs.usda.gov/snow/snow.htm

Idaho:
http://idsnow.id.nrcs.usda.gov

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

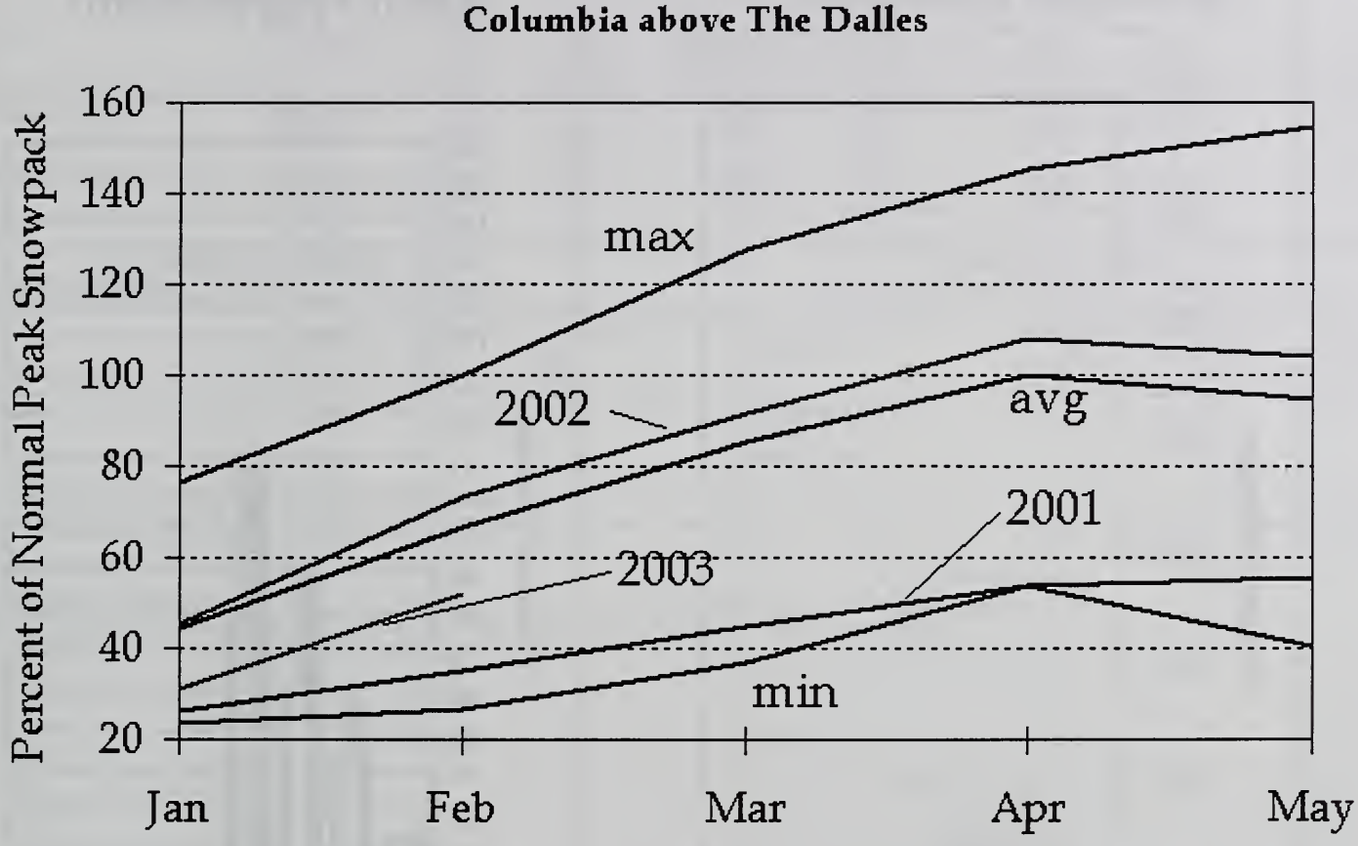
NWCC Anonymous FTP Server:
ftp.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

Washington:
http://www.wa.nrcs.usda.gov/nrcs

NRCS National:
http://www.ftw.nrcs.usda.gov

Columbia Basin Snowpack Summary



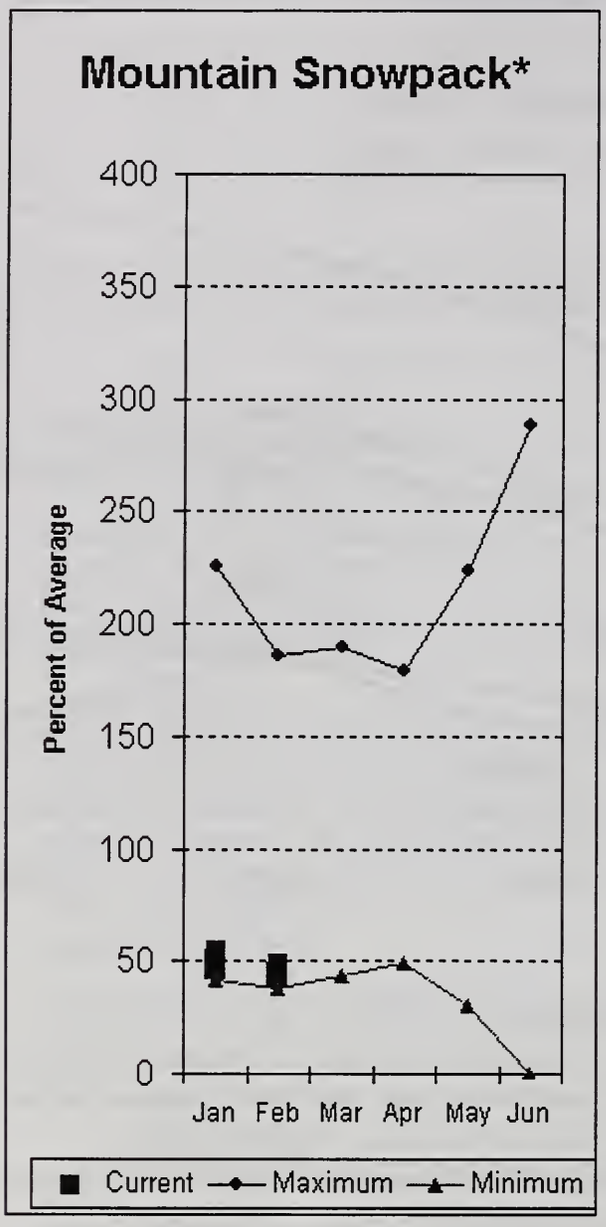
February 1, 2003

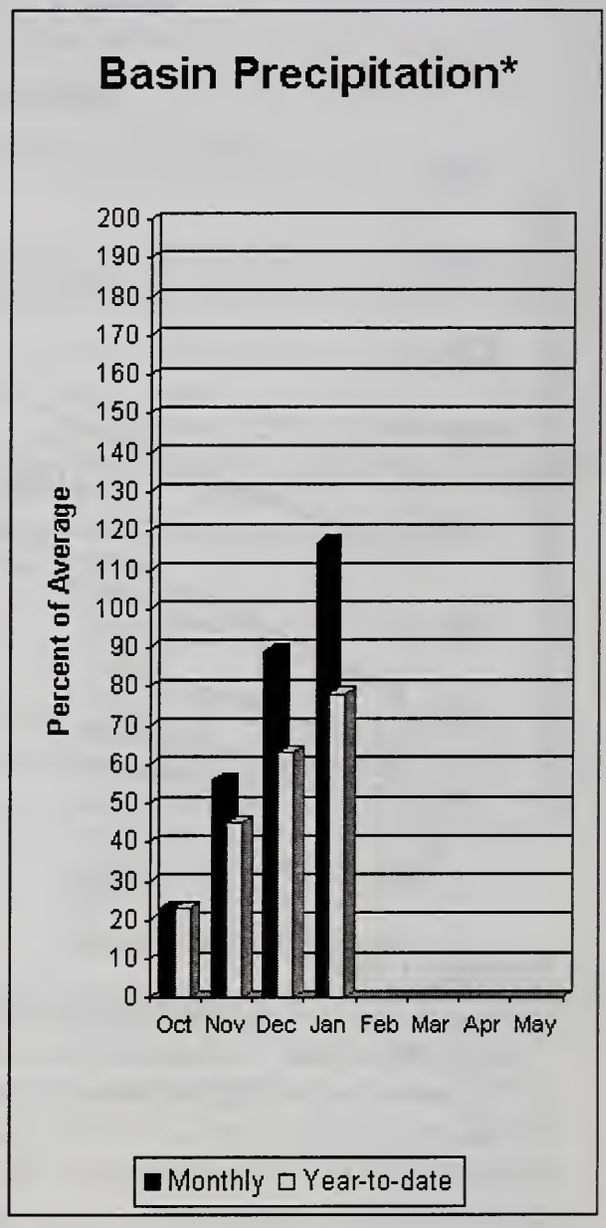
The Columbia Basin snowpack index increased to 78 percent of average on February 1, compared to 70.6 percent of average on January 1, and 109.8 percent last year. January experienced above average precipitation over much of the northern portion of the basin. However, that was countered by very dry conditions over the southern portion. Snowpacks range from 46 percent in eastern Oregon to 94 percent in central Idaho. The composite snowpack is 52.2 percent of a normal year's peak, compared
to 73.5 percent last year. Based on this composite, it would take 164 percent of the subsequent combined average snow water equivalent to equal the average peak for the Columbia Basin above The Dalles.

The Upper Columbia snowpack above Arrow Lakes is at 85 percent of average, an increase of 20 percent from last month. This is 73 percent of last year. Good increases were also recorded in the Pend Oreille Basin (+8%), the North Cascades (+15%), the Yakima Basin (+10%), and the Clearwater Basin (+9%). Small increases were recorded in the Kootenai, Spokane, Upper Snake River, and Salmon River basins.

On the other side of the coin, significant decreases were recorded over the central and southern Snake basins (-18%), eastern Oregon basins (-16%), central Oregon basins (-23%), and the Deschutes River Basins (-33%).

Spokane River Basin





*Based on selected stations

The February 1 forecasts for summer runoff within the Spokane River Basin are 54% of average near Post Falls and 58% at Long Lake. The forecast is based on a basin snowpack that is 59% of average and precipitation that is 78% of average for the water year. Precipitation for January was above normal at 117% of average. Streamflow on the Spokane River at Long Lake, was 77% of average for January. February 1 storage in Coeur d'Alene Lake, was 142,500-acre feet, 123% of average and 60% of capacity. Snowpack at Quartz Peak SNOTEL site was 72% of average with 11.1 inches of water content. Average temperatures in the Spokane basin were 6 degrees above normal for January and 3 degrees above for the water year.

For more information contact your local Natural Resources Conservation Service office.

SPOKANE RIVER BASIN
Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SPOKANE near Post Falls (2)	APR-SEP	825	1180	1420	54	1660	2020	2650
	APR-JUL	790	1130	1370	54	1610	1950	2552
SPOKANE at Long Lake (2)	APR-JUL	950	1350	1620	57	1890	2290	2851
	APR-SEP	1080	1500	1780	58	2060	2480	3072

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	142.5	115.0	115.6

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	13	39	50
NEWMAN LAKE	1	43	72

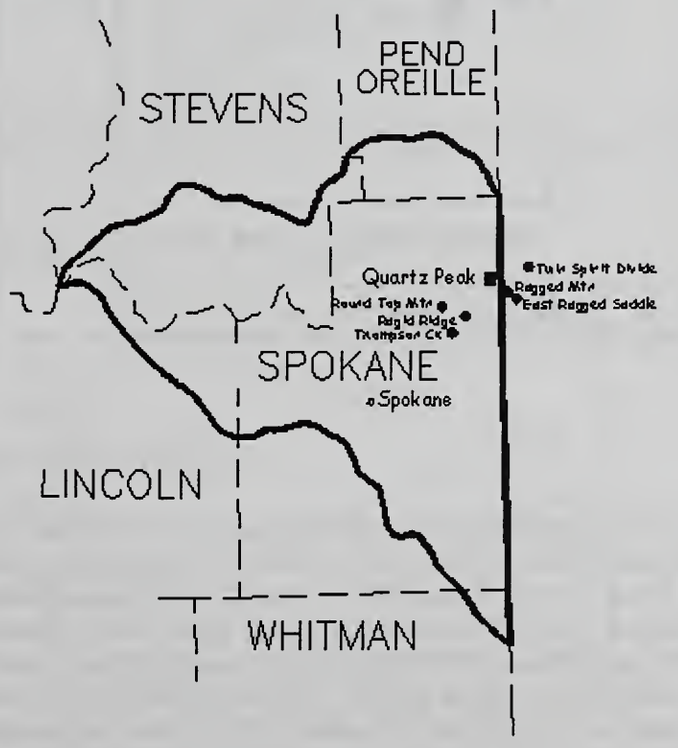
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

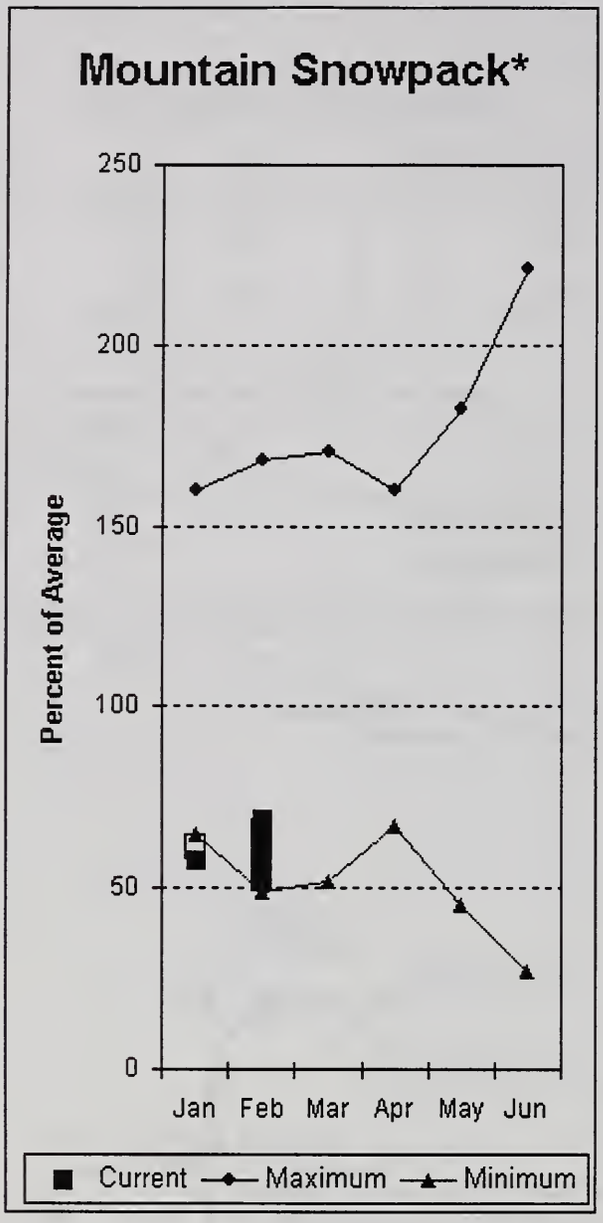
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

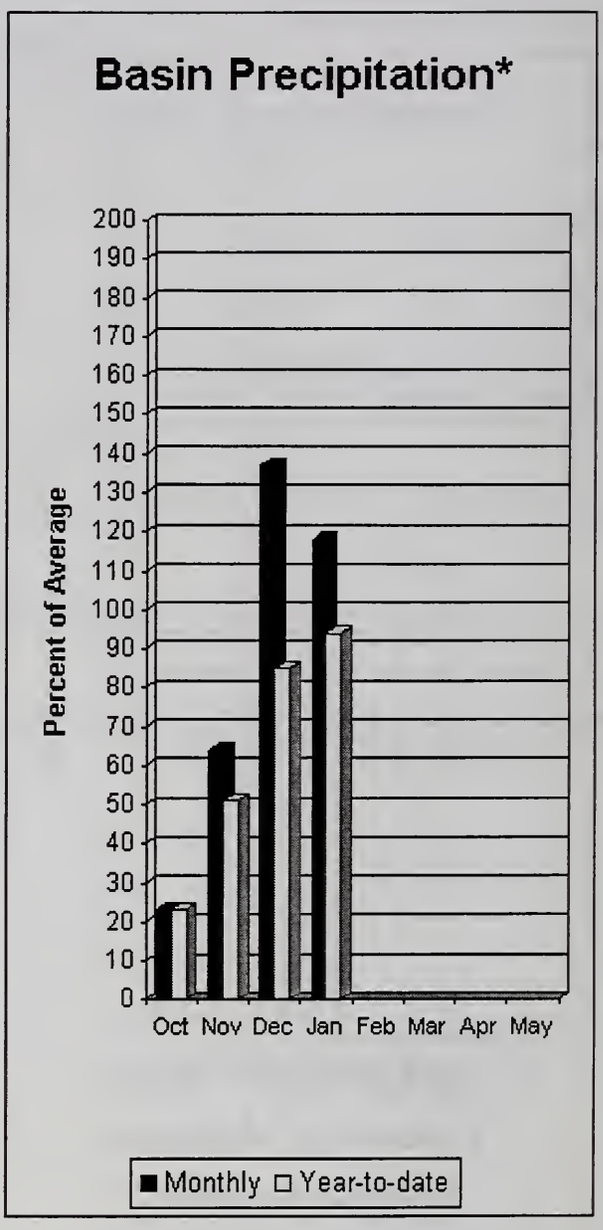
Spokane River Basin
Percent of Average
February 1, 2003

Snowpack - 49%
Precipitation - 78%
Reservoir Capacity - 123%



Colville - Pend Oreille River Basins





*Based on selected stations

The April – September average forecast for the Kettle River streamflow is 84%, Colville at Kettle Falls is 84%, and Priest River near the town of Priest River is 81%. January streamflow was 79% of average on the Pend Oreille River, 78% on the Columbia at Birchbank and 59% on the Kettle River. February 1 snow cover was 69% of average in the Pend Oreille Basin River Basin, 76% in the Colville River Basin and 90% at 2 sites in the Kettle River Basin. Bunchgrass Meadows SNOTEL site had 19.9 inches of snow water on the snow pillow. Normally Bunchgrass would have 18.6 inches on February 1. Precipitation during January was 118% of average, bringing the year-to-date precipitation to 94% of average. Reservoir storage in Roosevelt and Banks lakes was reported to be 119% of average and 91% of capacity on February 1. Average temperatures were 6 degrees above normal for January and 3 degrees above for the water year.

For more information contact your local Natural Resources Conservation Service office.

Colville - Pend Oreille River Basins

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
PEND OREILLE Lake Inflow (2)	APR-JUL	5350	7110	8300	65	9490	11250	12700
	APR-SEP	5830	7750	9060	65	10370	12290	13900
PRIEST near Priest River (1,2)	APR-JUL	500	610	660	81	710	820	814
	APR-SEP	415	615	705	81	795	1000	868
PEND OREILLE bl Box Canyon (2)	APR-JUL	5860	7450	8540	66	9630	11220	12900
	APR-SEP	6090	8010	9320	66	10630	12550	14100
CHAMOKANE CREEK near Long Lake	MAY-AUG	3.9	6.6	8.5	83	10.4	13.1	10.2
COLVILLE at Kettle Falls	APR-SEP	77	101	118	84	135	161	141
	APR-JUL	67	90	106	83	122	147	128
KETTLE near Laurier	APR-SEP	1290	1500	1650	84	1800	2010	1972
	APR-JUL	1240	1440	1570	84	1700	1900	1874
COLUMBIA at Birchbank (1,2)	APR-JUL	22717	26694	28500	82	30310	34280	34900
	APR-SEP	28256	33237	35500	82	37760	42740	43500
COLUMBIA at Grand Coulee Dm (1,2)	APR-SEP	36434	45007	48900	76	52790	61370	63990
	APR-JUL	30746	37935	41200	77	44460	51650	53850

COLVILLE - PEND OREILLE RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROOSEVELT	5232.0	4759.3	3803.2	4222.2
BANKS		NO REPORT		

COLVILLE - PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	1	65	76
PEND OREILLE RIVER	9	68	63
KETTLE RIVER	5	94	92

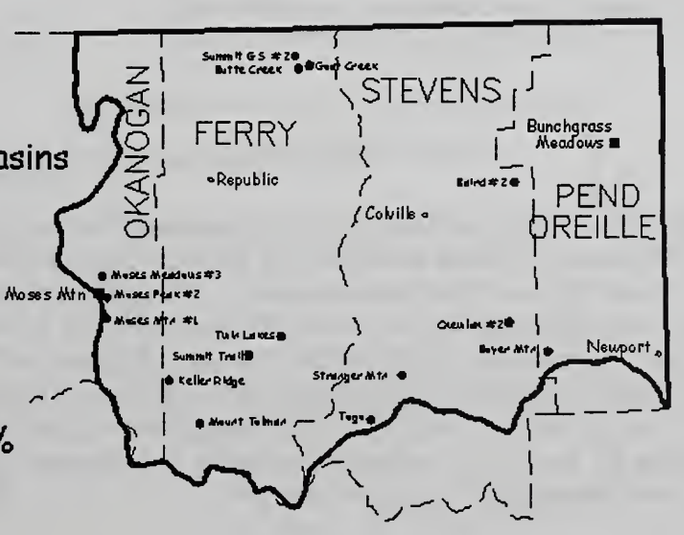
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

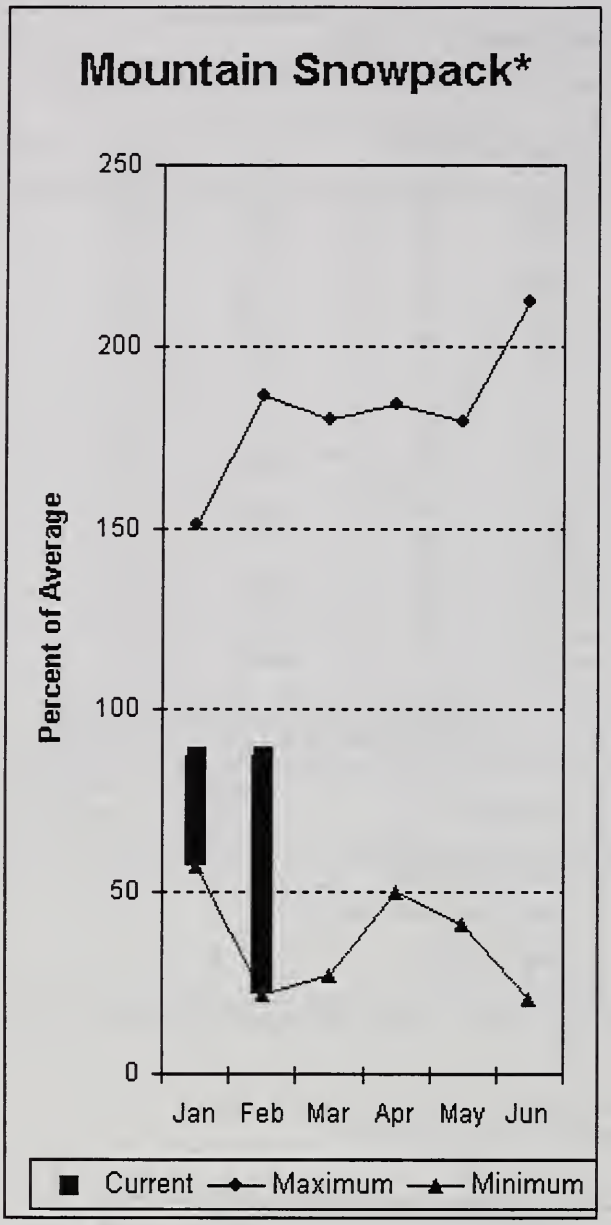
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

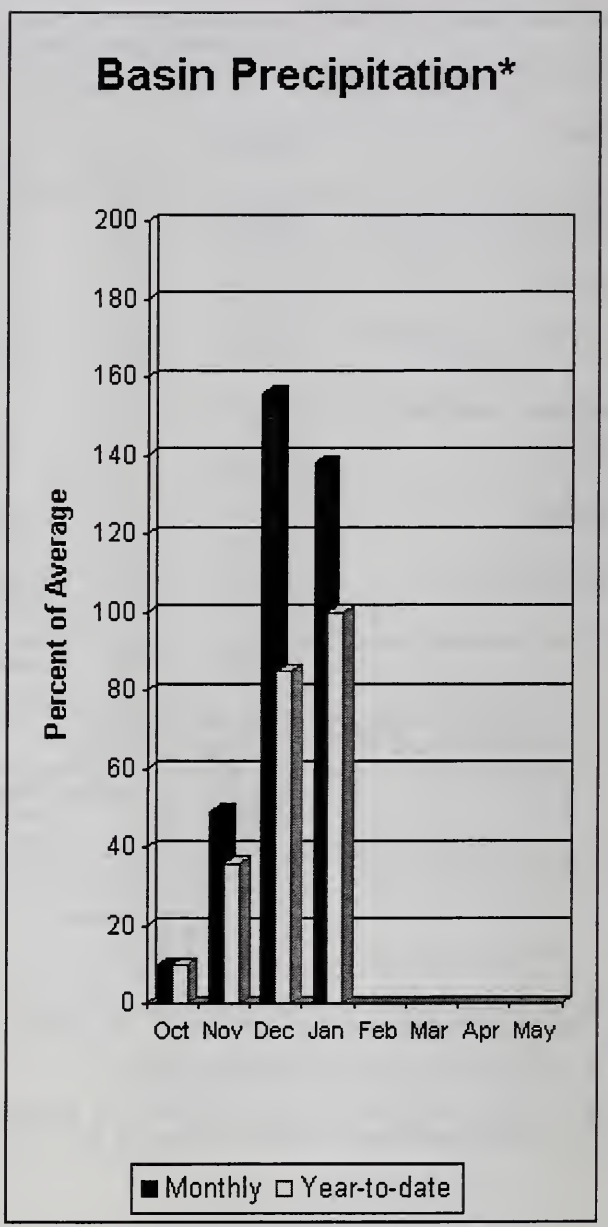
Colville-Pend Oreille River Basins
Percent of Average
February 1, 2003

Snowpack - 69%
Precipitation - 94%
Reservoir Capacity - 113%



Okanogan - Methow River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 63%, Similkameen River is 63%, Methow River is 70%, Salmon Creek is 100% and Beaver Creek is 99%. February 1 snow cover on the Okanogan was 77% of average and Methow was 89%. January precipitation in the Okanogan-Methow was 138% of average, with precipitation for the water year at 100% of average. January streamflow for the Methow River was 68% of average, 62% for the Okanogan River and 57% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 9.3 inches. Average for this site is 7.5 inches on February 1. Combined storage in the Conconully Reservoirs was 6,500-acre feet, which is 28% of capacity and 39% of the February 1 average. Temperatures were 6-7 degrees above normal for the past month and 2-3 degrees above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Okanogan - Methow River Basins

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SIMILKAMEEN near Nighthawk (1)	APR-JUL	535	760	860	64	960	1190	1350
	APR-SEP	335	735	920	63	1100	1510	1450
OKANOGAN near Tonasket (1)	APR-JUL	285	770	990	63	1210	1690	1580
	APR-SEP	305	860	1110	63	1360	1910	1766
SALMON CREEK near Conconully	APR-JUL	7.7	15.0	20	100	25	32	20
	APR-SEP	8.5	16.0	21	100	26	33	21
BEAVER CREEK below SF near Twisp	APR-SEP	5.6	9.4	12.0	99	14.6	18.4	12.1
	APR-JUL	4.8	8.5	11.0	99	13.5	17.2	11.1
METHOW RIVER near Pateros	APR-SEP	375	560	690	70	820	1010	985
	APR-JUL	470	570	640	70	710	815	911

OKANOGAN - METHOW RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE	10.5	3.1	3.5	8.4
CONCONULLY RESERVOIR	13.0	3.4	2.9	8.2

OKANOGAN - METHOW RIVER BASINS
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	17	72	75
OMAK CREEK	3	105	130
SANPOIL RIVER	2	30	100
SIMILKAMEEN RIVER	3	47	38
TOATS COULEE CREEK	1	114	92
CONCONULLY LAKE	3	120	125
METHOW RIVER	5	88	89

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

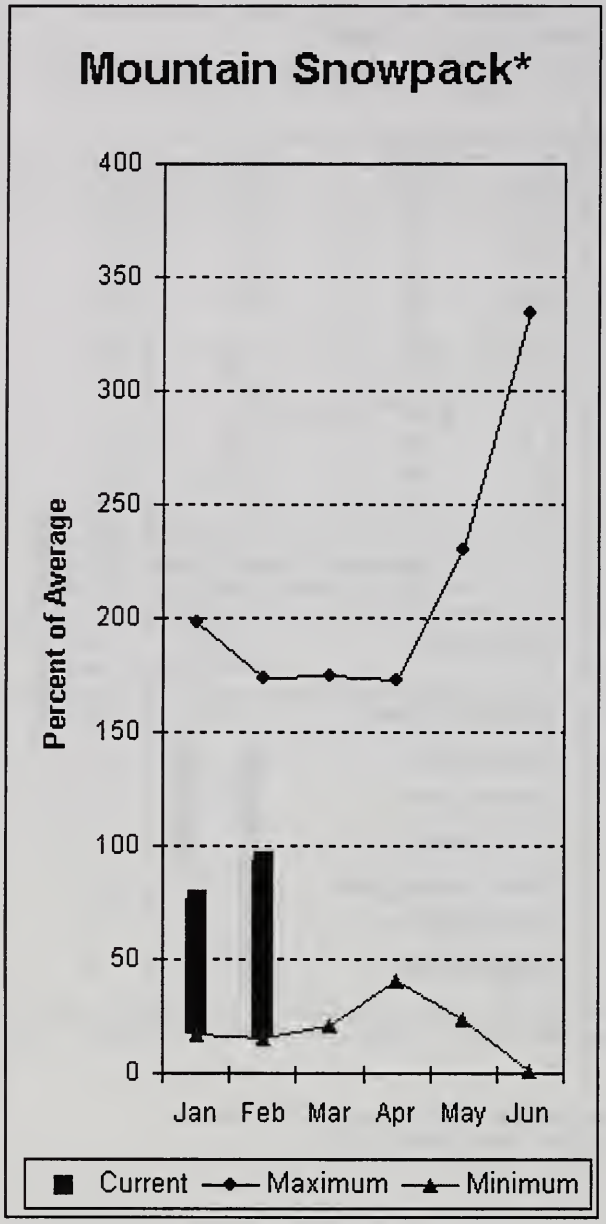
The average is computed for the 1971-2000 base period.

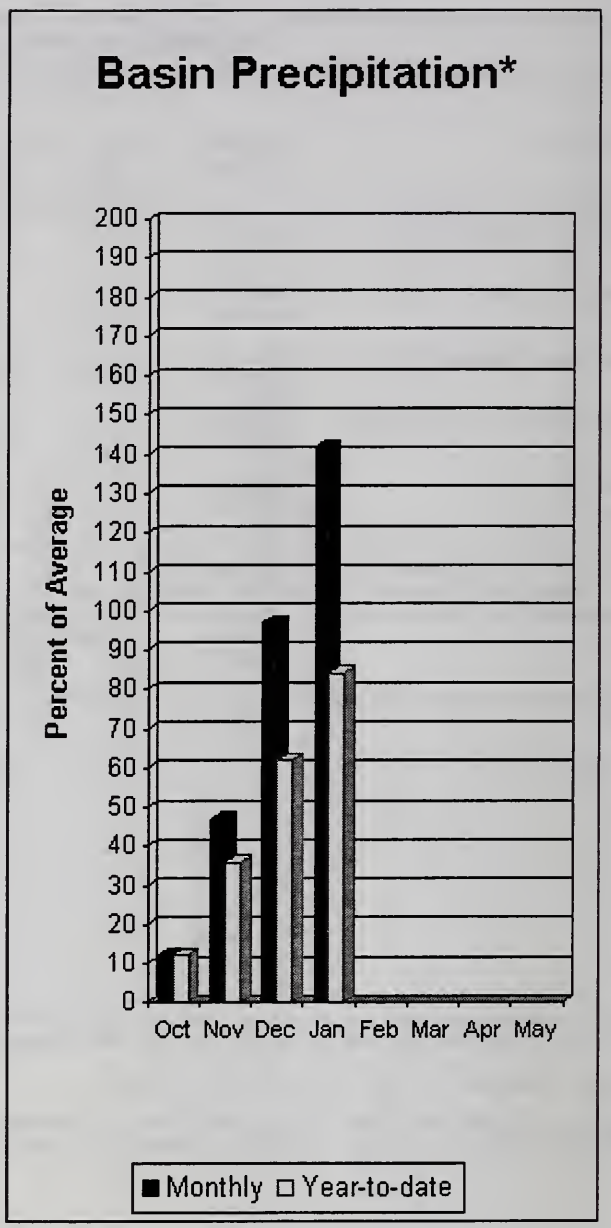
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Okanogan-Methow River Basins
Percent of Average
February 1, 2003

Snowpack - 87%
Precipitation - 100%
Reservoir Capacity - 89%

Wenatchee - Chelan River Basins





*Based on selected stations

Precipitation during January was 142% of average in the basin and 84% for the year-to-date. Runoff for Entiat River is forecast to be 74% of average for the summer. The April-September average forecast for Chelan River is 75%, Wenatchee River at Plain is 68% and Stehekin is 71%. Icicle, Stemilt and Squilchuck creeks are all expected to fall into the same forecast range. January average streamflows on the Chelan River were 97% and on the Wenatchee River 74%. February 1 snowpack in the Wenatchee River Basin was 76% of average; the Chelan, 77%; the Entiat, 103%; Stemilt Creek, 88% and Colockum Creek, 123%. Reservoir storage in Lake Chelan was 314,100-acre feet, 100% of February 1 average and 46% of capacity. Lyman Lake SNOTEL had the most snow water with 35.5 inches of water. This site would normally have 43.4 inches on February 1. Temperatures were 6 degrees above normal for January and 2 degrees above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CHELAN RIVER near Chelan	APR-SEP	715	820	890	75	960	1070	1185
	APR-JUL	635	725	785	75	845	930	1046
STEHEKIN near STEHEKIN	APR-SEP	475	545	590	71	635	705	827
	APR-JUL	410	465	500	72	535	590	699
ENTIAT RIVER near Ardenvoir	APR-SEP	133	158	175	74	191	216	238
	APR-JUL	122	145	160	74	175	198	216
WENATCHEE at Plain	APR-SEP	630	740	810	68	880	990	1198
	APR-JUL	625	705	755	70	805	885	1078
WENATCHEE R. at Peshastin	APR-SEP	689	951	1130	69	1309	1570	1635
	APR-JUL	519	823	1030	70	1235	1540	1481
STEMILT nr Wenatchee (miners in)	MAY-SEP	43	71	90	65	109	137	138
ICICLE CREEK near Leavenworth	APR-SEP	185	210	225	65	240	265	345
	APR-JUL	175	195	210	66	225	245	318
COLUMBIA R. bl Rock Island Dam (2)	APR-SEP	42251	48830	53300	77	57770	64350	69540
	APR-JUL	33688	40542	45200	77	49860	56710	59020

WENATCHEE - CHELAN RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	314.1	335.7	315.5

WENATCHEE - CHELAN RIVER BASINS
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CHELAN LAKE BASIN	5	66	77
ENTIAT RIVER	2	130	103
WENATCHEE RIVER	13	75	76
SQUILCHUCK CREEK	0	0	0
STEMILT CREEK	2	99	88
COLOCKUM CREEK	2	117	123

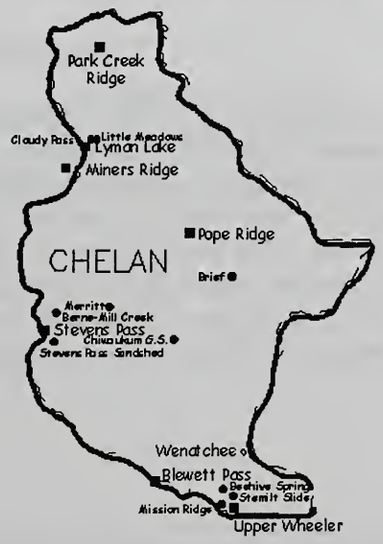
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

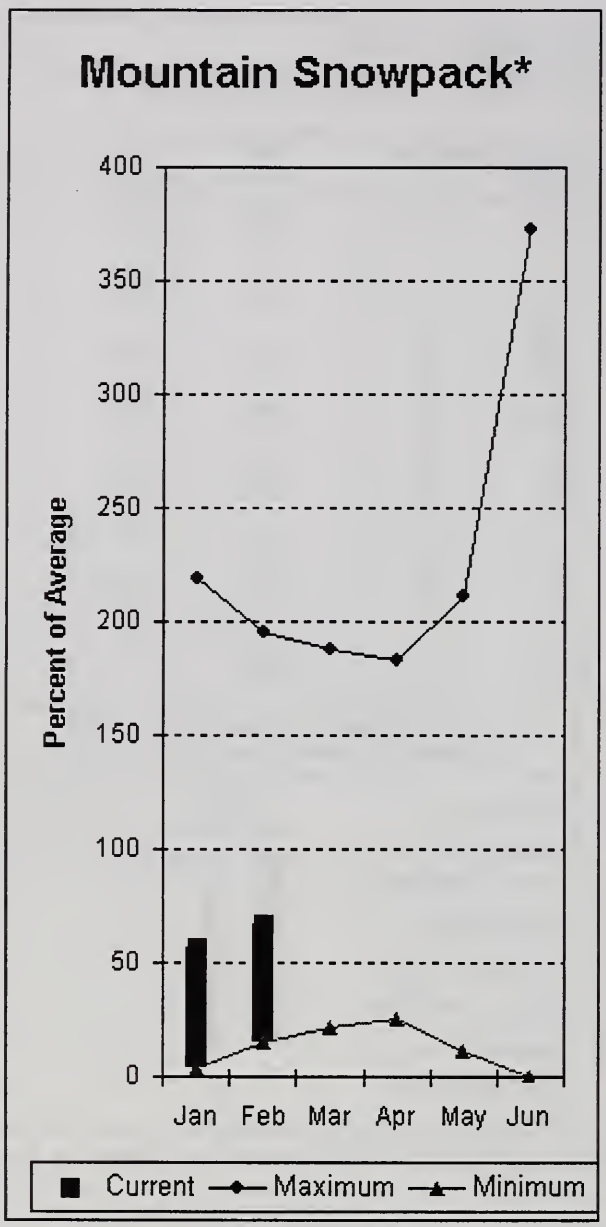
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

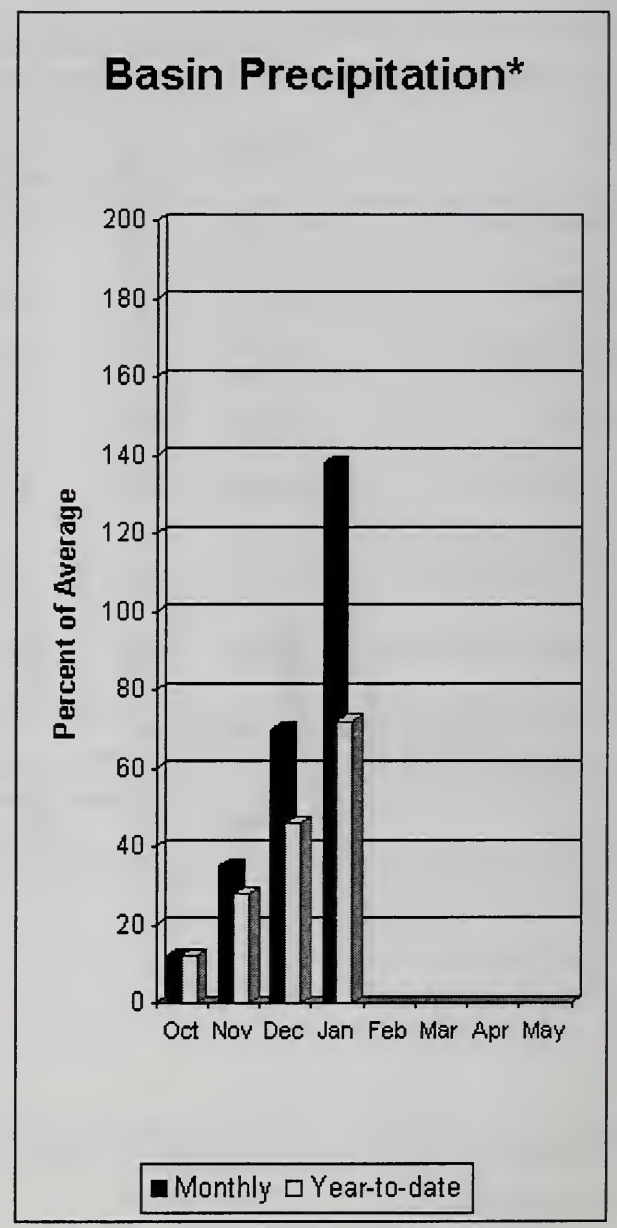
Wenatchee-Chelan River Basins
Percent of Average
February 1, 2003

Snowpack - 93%
Precipitation - 84%
Reservoir Capacity - 100%



Upper Yakima River Basin





*Based on selected stations

February 1 reservoir storage for the Upper Yakima reservoirs was 368,800-acre feet, 83% of average. Forecasts for the Yakima River at Cle Elum are 67% of average and the Teanaway River near Cle Elum is at 70%. Lake inflows are all forecasted to fall into the same range this summer. January streamflows within the basin were Yakima near Cle Elum at 102% and Cle Elum River near Roslyn at 109%. February 1 snowpack was 67% based upon 12 snow courses and SNOTEL readings within the Upper Yakima Basin. Precipitation was 138% of average for January and 72% year-to-date for water. Volume forecasts for the Yakima Basin are for natural flow. As such, they February differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Upper Yakima River Basin

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<Drier (1000AF) 90%	70%	Future Conditions 50% (Most Probable) (1000AF)	(% AVG.)	Wetter>> 30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
KEECHELUS LAKE INFLOW	APR-JUL	58	72	82	68	92	106	121
	APR-SEP	64	79	90	68	101	116	133
KACHESS LAKE INFLOW	APR-JUL	55	67	75	68	83	95	111
	APR-SEP	59	72	81	68	90	103	120
CLE ELUM LAKE INFLOW	APR-JUL	220	255	280	69	305	340	408
	APR-SEP	235	275	305	68	335	375	448
YAKIMA at Cle Elum	APR-JUL	425	500	550	67	600	675	822
	APR-SEP	470	550	605	67	660	740	903
TEANAWAY near Cle Elum	APR-JUL	75	89	99	69	109	123	143
	APR-SEP	78	92	102	70	112	126	146

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	41.1	79.1	89.9
KACHESS	239.0	137.5	88.9	139.4
CLE ELUM	436.9	190.2	159.7	215.4

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
UPPER YAKIMA RIVER	12	62	67

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

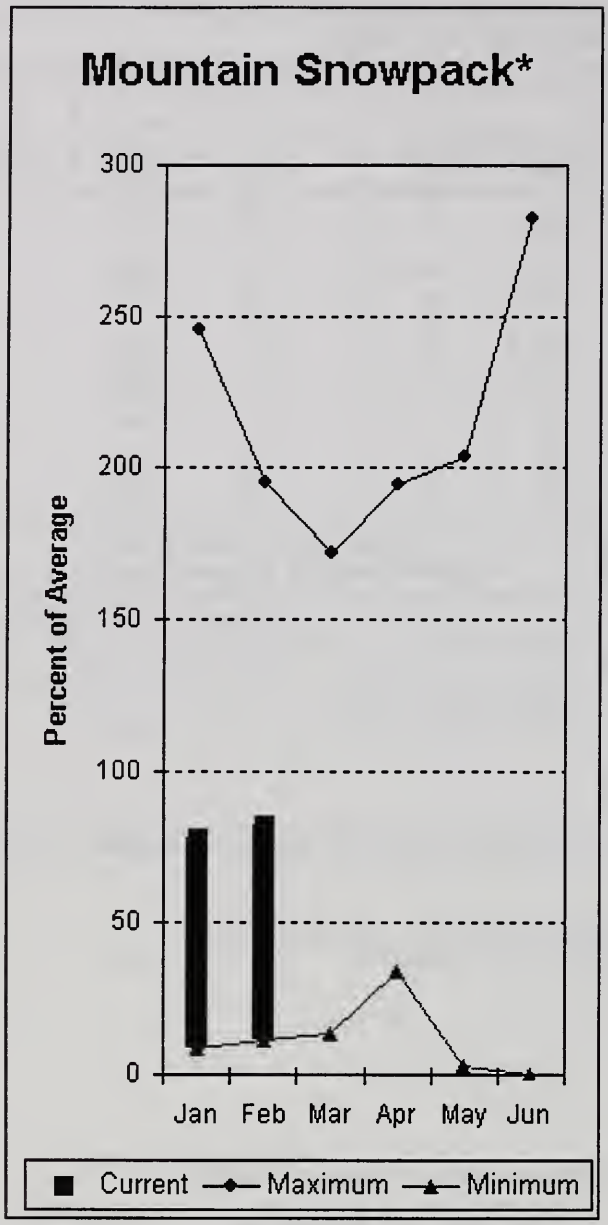
The average is computed for the 1971-2000 base period.

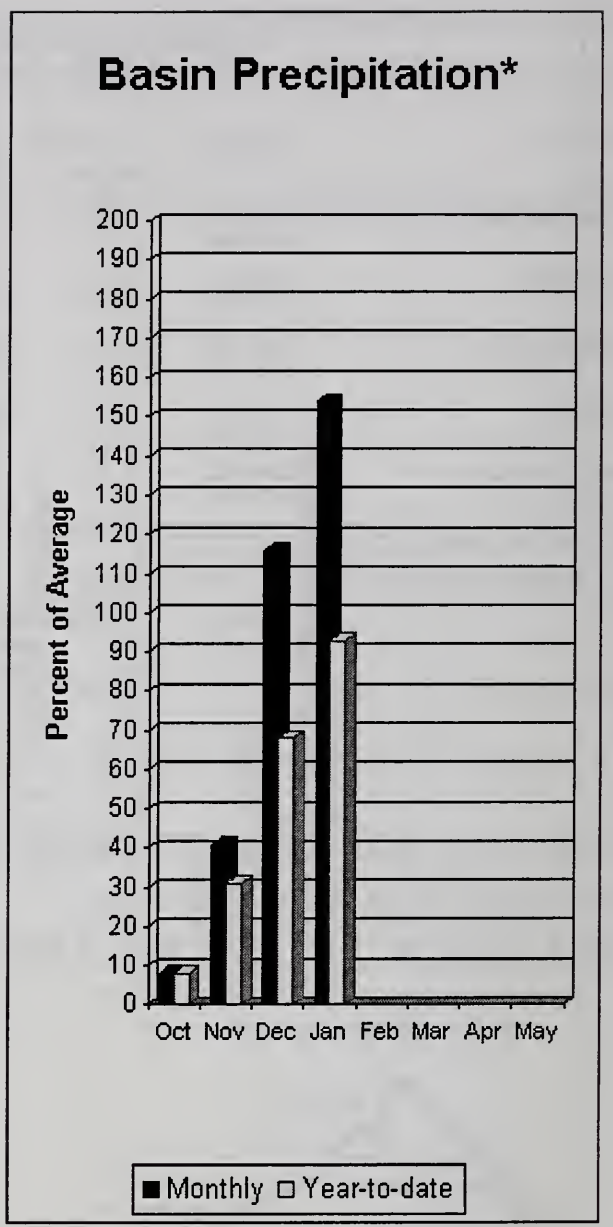
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Upper Yakima River Basin
Percent of Average
February 1, 2003

Snowpack - 67%
Precipitation - 72%
Reservoir Capacity - 83%

Lower Yakima River Basin





*Based on selected stations

January average streamflows within the basin were: Yakima River near Parker, 108%; Naches River near Naches, 113%; and Yakima River at Kiona, 82%. February 1 reservoir storage for Bumping and Rimrock reservoirs was 132,500-acre feet, 109% of average. Forecast averages for Yakima River near Parker are 73%; American River near Nile, 79%; Ahtanum Creek, 80%; and Klickitat River near Glenwood, 61%. February 1 snowpack was 77% based upon 8 snow courses and SNOTEL readings within the Lower Yakima Basin. Precipitation was 154% of average for January and 93% year-to-date for water. Temperatures were 6 degrees above normal for the month and 2 degrees above average for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they February differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Lower Yakima River Basin

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
BUMPING LAKE INFLOW	APR-SEP	77	92	103	77	114	129	134
	APR-JUL	71	85	94	77	103	117	122
AMERICAN RIVER near Nile	APR-SEP	72	85	93	79	101	114	118
	APR-JUL	66	77	85	79	93	104	108
RIMROCK LAKE INFLOW	APR-SEP	142	167	184	76	200	225	242
	APR-JUL	122	142	155	76	168	188	204
NACHES near Naches	APR-SEP	480	560	610	73	660	740	837
	APR-JUL	445	510	555	73	600	665	758
AHTANUM CREEK nr Tampico (2)	APR-SEP	18.3	29	37	80	45	56	46
	APR-JUL	16.9	27	34	81	41	51	42
YAKIMA near Parker	APR-SEP	1080	1270	1400	73	1530	1720	1918
	APR-JUL	980	1150	1270	73	1390	1560	1731
KLICKITAT near Glenwood	APR-JUN	57	70	78	61	86	99	129
	APR-SEP	69	87	99	61	111	129	163

LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	24.7	18.0	9.9
RIMROCK	198.0	107.8	85.0	111.8

LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

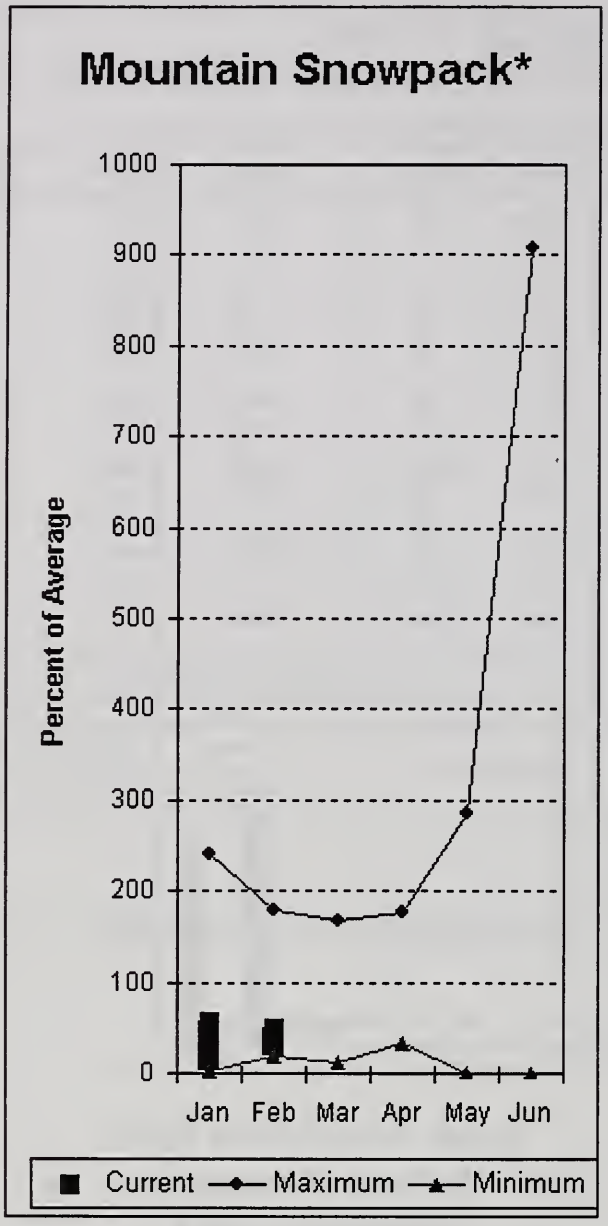
The average is computed for the 1971-2000 base period.

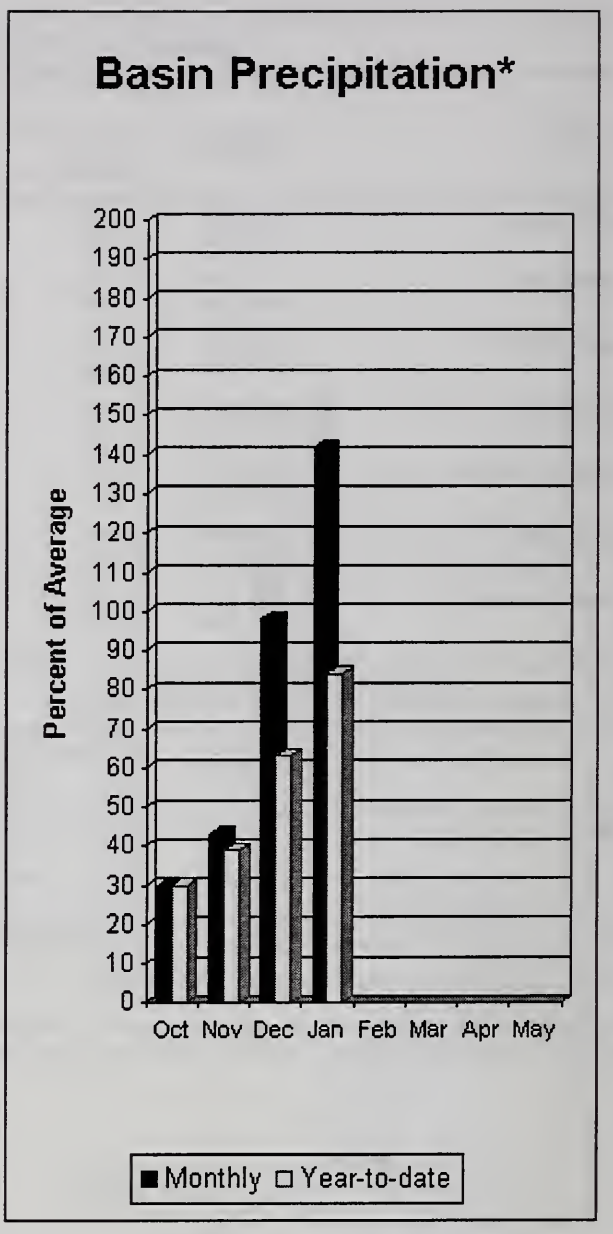
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Lower Yakima River Basin
Percent of Average
February 1, 2003

Snowpack - 82%
Precipitation - 93%
Reservoir Capacity - 109%

Walla Walla River Basin





*Based on selected stations

January precipitation was 142% of average, maintaining the year-to-date precipitation at 84% of average. Snowpack in the basin was 49% of average. Streamflow forecasts are 43% of average for Mill Creek and 71% for the SF Walla Walla near Milton-Freewater. January streamflow was 129% of average for the Walla Walla River. Average temperatures were 5 degrees above normal for January and 2 degrees above average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
MILL CREEK at Walla Walla	APR-SEP	4.4	6.5	7.9	43	11.2	15.9	18.4
	APR-JUL	4.3	6.4	7.8	43	11.1	15.9	18.2
SF WALLA WALLA near Milton-Freewater	APR-JUL	27	34	38	72	42	49	53
	APR-SEP	35	42	47	71	52	59	66

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WALLA WALLA RIVER	2	41	49

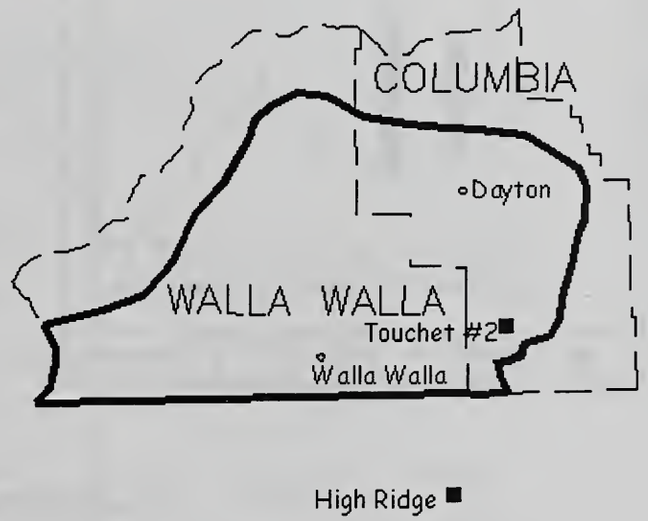
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

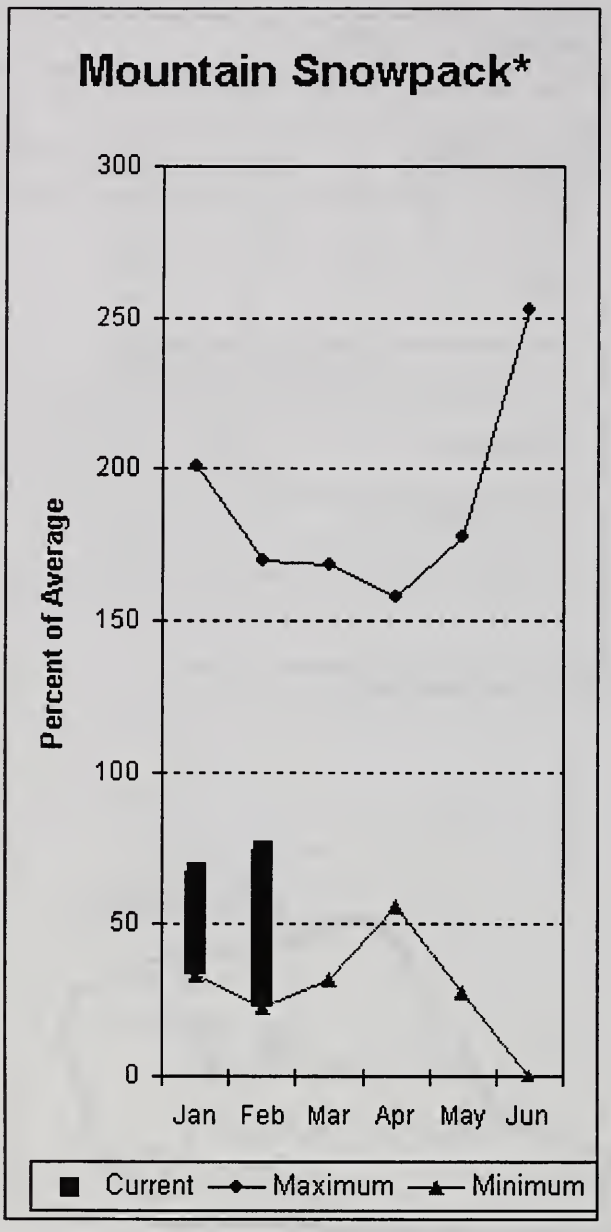
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

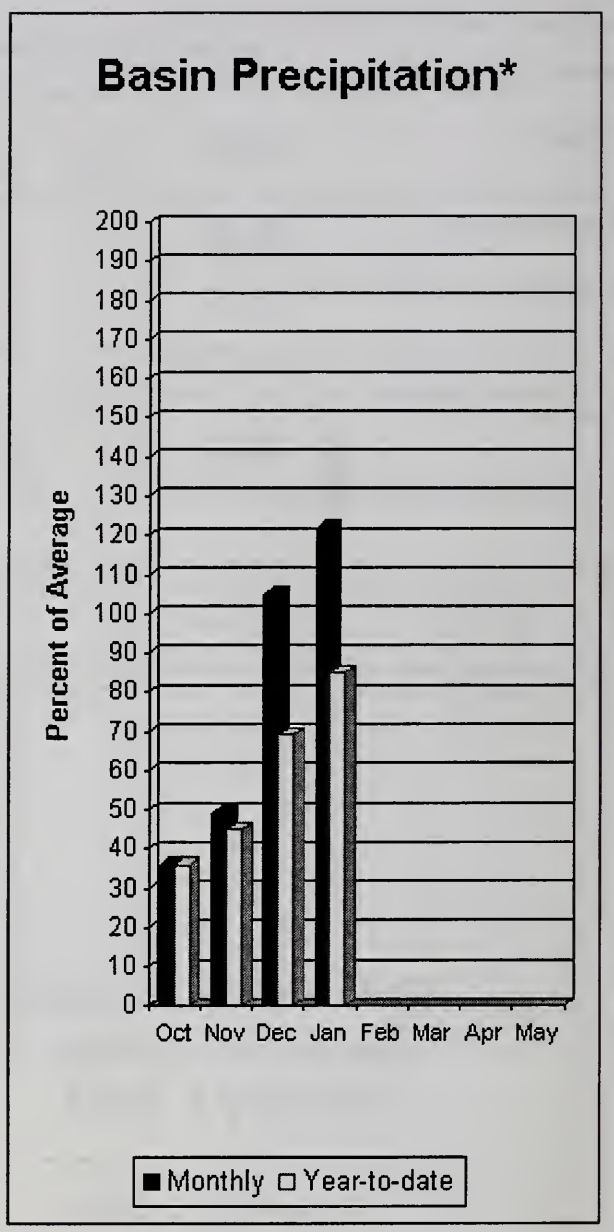
Walla Walla River Basin
Percent of Average
February 1, 2003

Snowpack - 49%
Precipitation - 84%



Lower Snake River Basin





*Based on selected stations

The April - September forecast is for 66% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 70% and 72% of normal respectively. January precipitation was 122% of average, bringing the year-to-date precipitation to 85% of average. February 1 snowpack readings averaged 74% of normal. January streamflow was 74% of average for Snake River below Lower Granite Dam and 65% for Grande Ronde River near Troy. Average temperatures were 5 degrees above normal for January and 2 degrees above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Lower Snake River Basin

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
GRANDE RONDE at Troy (1)	MAR-JUL	572	962	1140	72	1318	1710	1578
	APR-SEP	471	824	985	72	1146	1500	1372
CLEARWATER at Spalding (1,2)	APR-JUL	1820	3870	4800	65	5730	7780	7435
	APR-SEP	2100	4150	5080	65	6010	8060	7850
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	5385	11791	14700	68	17610	24010	21550
	APR-SEP	6031	13230	16500	69	19770	26970	24100

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

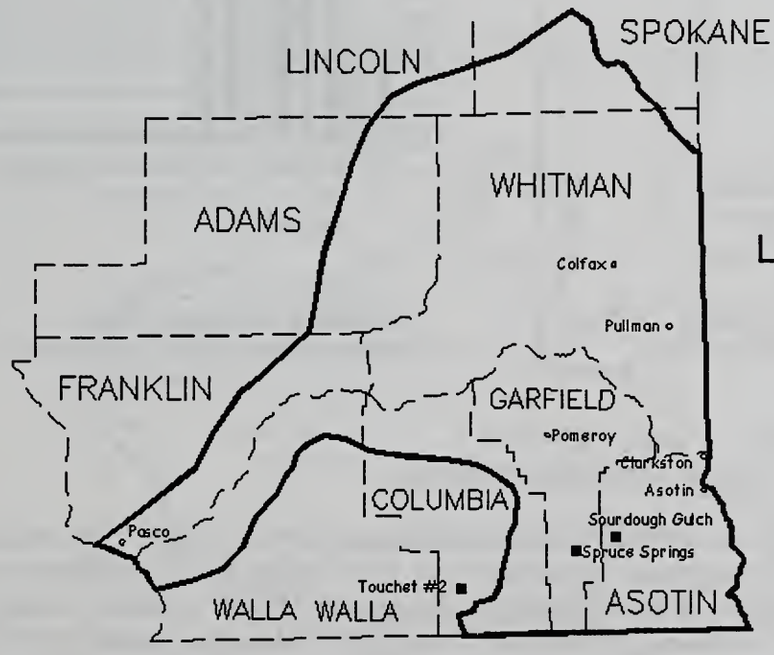
LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LOWER SNAKE, GRANDE RONDE	15	62	74

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

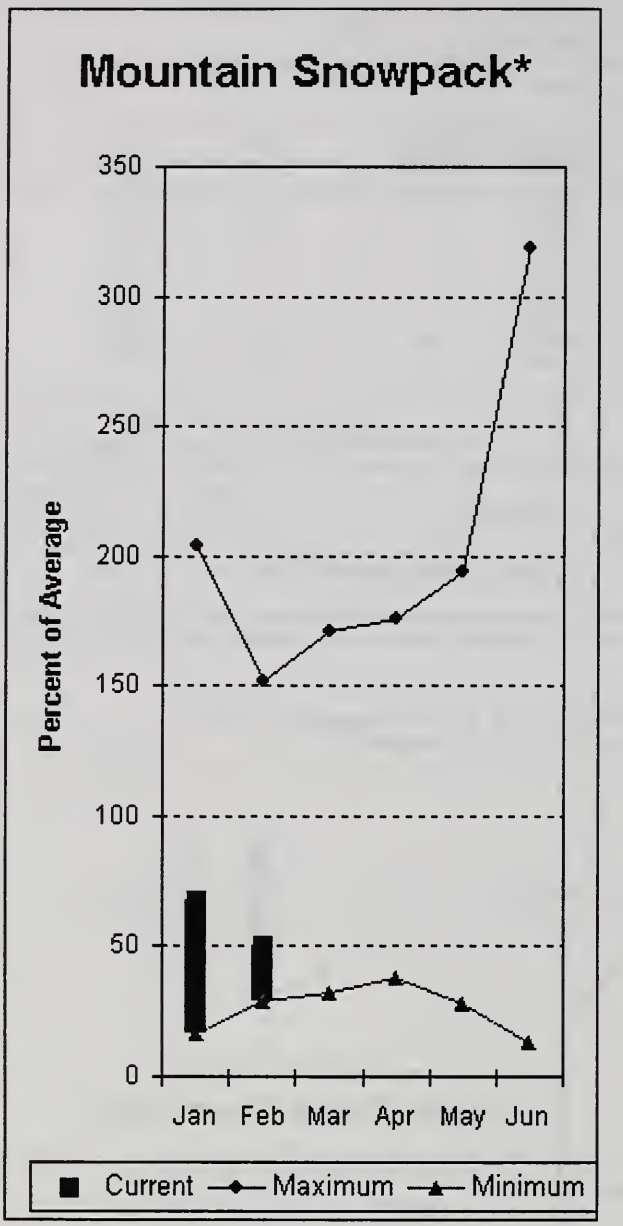
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

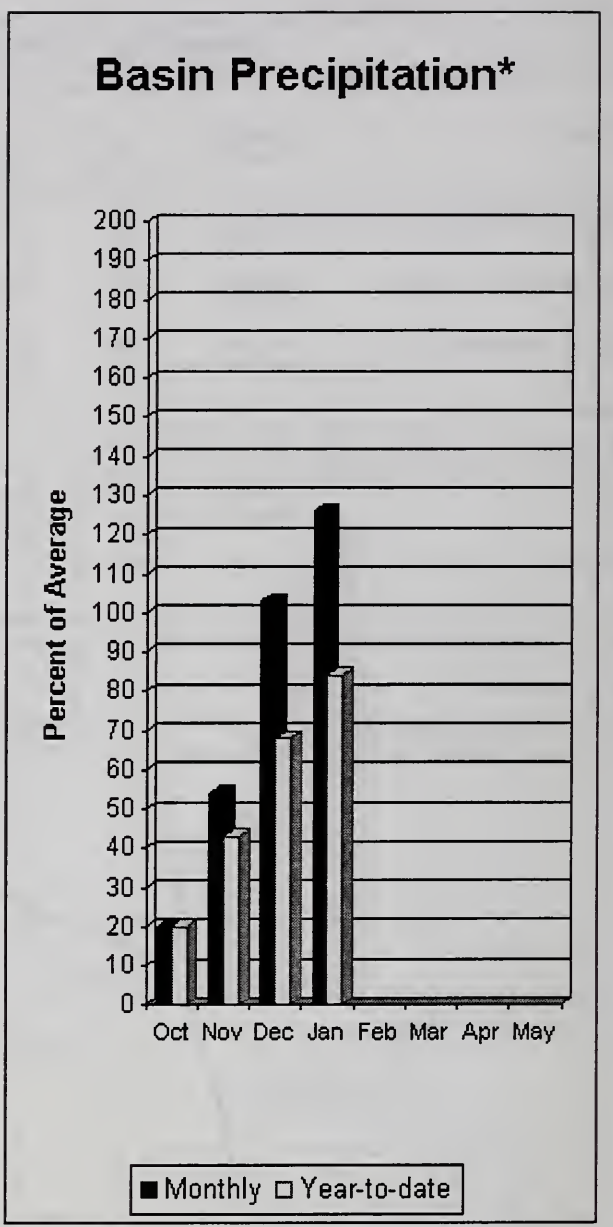


Lower Snake River Basin
Percent of Average
February 1, 2003

Snowpack - 74%
Precipitation - 85%

Cowlitz - Lewis River Basins





*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 75% and Cowlitz River at Castle Rock, 78% of average. January average streamflow for Cowlitz River was 96% and 135% for Lewis River. The Columbia River at the Dalles was also low at 76% of average. January precipitation was 126% of average and the water-year average was 84%. February 1 snow cover for Cowlitz River was 57%, and Lewis River was 42% of average. Average temperatures were 4 degrees above normal during January and have averaged 2 degrees above throughout the water year.

For more information contact your local Natural Resources Conservation Service office.

Cowlitz - Lewis River Basins

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
LEWIS at Ariel (2)	APR-JUL	487	661	780	76	899	1073	1031
	APR-SEP	577	758	880	75	1002	1183	1176
COWLITZ R. bl Mayfield Dam (2)	APR-SEP	416	1067	1510	79	1953	2604	1922
	APR-JUL	231	885	1330	79	1775	2429	1692
COWLITZ R. at Castle Rock (2)	APR-SEP	503	1424	2050	78	2676	3597	2639
	APR-JUL	1012	1469	1780	78	2091	2548	2279
KLICKITAT near Glenwood	APR-JUN	57	70	78	61	86	99	129
	APR-SEP	69	87	99	61	111	129	163
COLUMBIA R. at The Dalles (2)	APR-SEP	51764	62146	69200	70	76250	86640	98650
	APR-JUL	40283	51606	59300	70	66990	78320	84650

COWLITZ - LEWIS RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

COWLITZ - LEWIS RIVER BASINS
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	4	28	42
COWLITZ RIVER	6	53	57

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

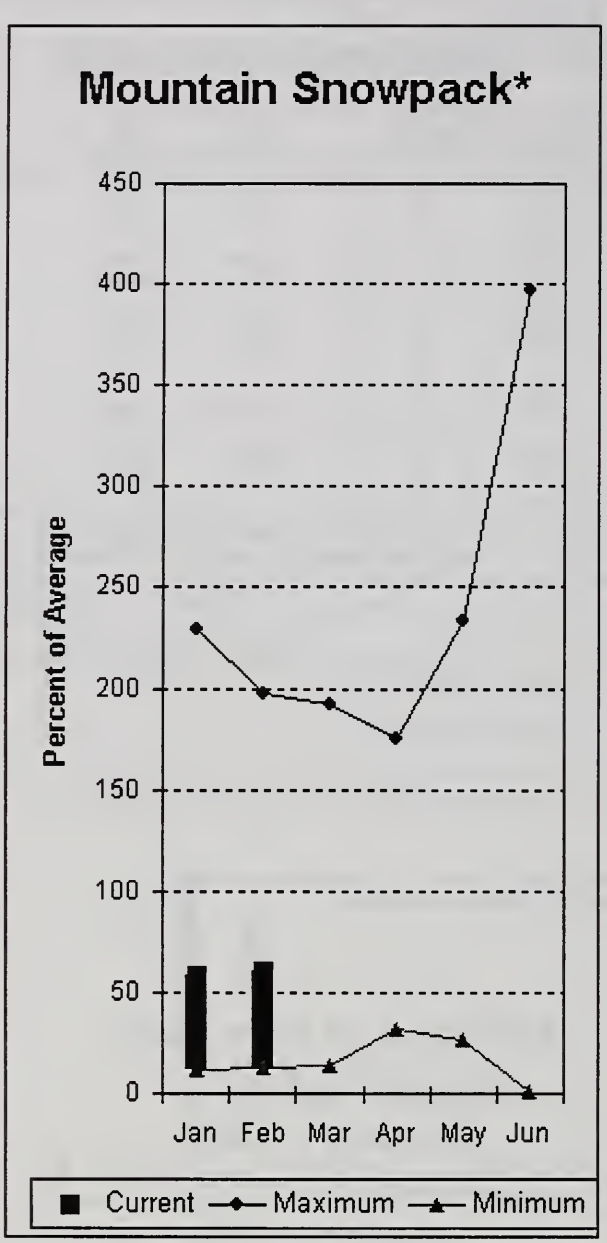
The average is computed for the 1971-2000 base period.

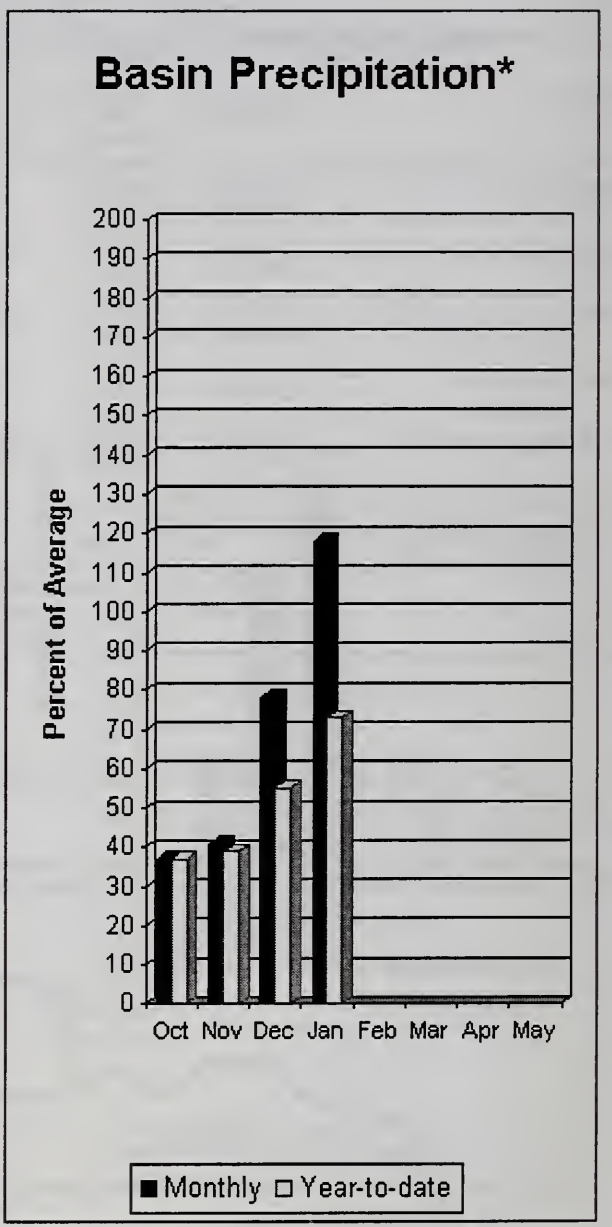
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Cowlitz-Lewis River Basins
Percent of Average
February 1, 2003

Snowpack - 50%
Precipitation - 84%

White - Green River Basins





*Based on selected stations

Summer runoff is forecast to be 75% of normal for both the Green River below Howard Hanson Dam and for the White River near Buckley. February 1 snowpack was 75% of average in both White River and Puyallup River basins and 45% in Green River Basin. Water content on February 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 16.2 inches. This site has a February 1 average of 22.1 inches. January precipitation was 118% of average, bringing the water year-to-date to 73% of average for the basins. Average temperatures in the area were 4-5 degrees above normal last month and 2 degrees above for the water-year.

For more information contact your local Natural Resources Conservation Service office.

White - Green - Puyallup River Basins

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
WHITE near Buckley (1,2)	APR-JUL	232	299	330	75	361	428	440
	APR-SEP	286	364	400	75	436	514	534
GREEN below Howard Hanson (1,2)	APR-JUL	95	153	180	74	207	265	243
	APR-SEP	113	173	200	75	227	287	268

WHITE - GREEN - PUYALLUP RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

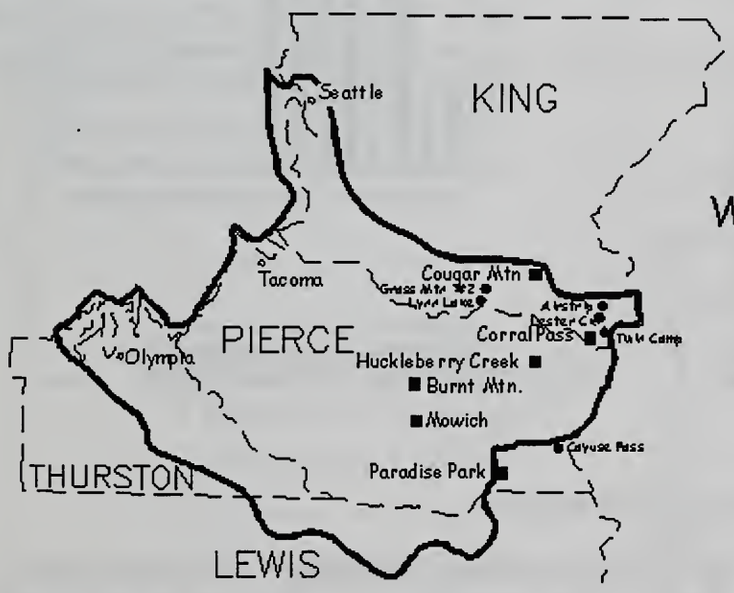
WHITE - GREEN - PUYALLUP RIVER BASINS
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	62	75
GREEN RIVER	7	40	46
PUYALLUP RIVER	3	60	75

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

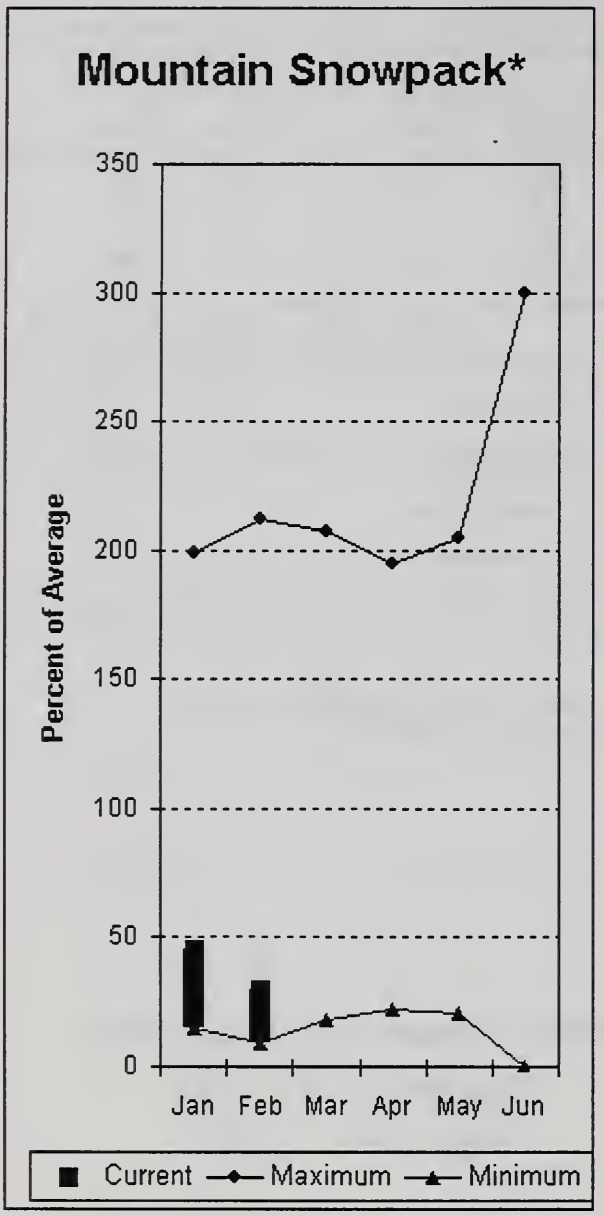
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

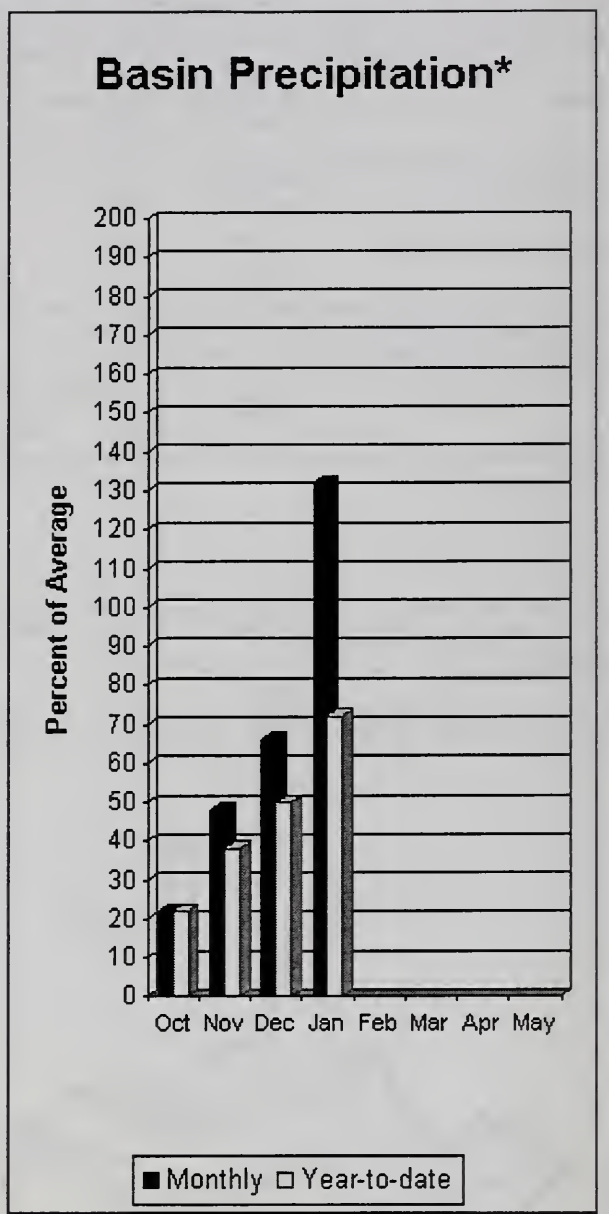


White-Green-Puyallup Basins
Percent of Average
February 1, 2003

Snowpack - 60%
Precipitation - 73%

Central Puget Sound River Basins





*Based on selected stations

Forecast for spring and summer flows are: 75% for Cedar River near Cedar Falls; 71% for Rex River; 74% for South Fork of the Tolt River; and 71% for Cedar River at Cedar Falls. Basin-wide precipitation for January was 132% of average, bringing water-year-to-date to 72% of average. February 1 average snow cover in Cedar River Basin was 30%, Tolt River Basin was 6%, Snoqualmie River Basin was 38%, and Skykomish River Basin was 44%. Olallie Meadows SNOTEL site at 3960 feet, had 19.6 inches of water content. Average February 1 water content is 39.2 inches at Olallie Meadows. January temperatures were 5 degrees above average for the past month and 2 degrees above normal for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Central Puget Sound River Basins

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CEDAR near Cedar Falls	APR-JUL	34	45	53	73	61	72	73
	APR-SEP	40	52	60	75	68	80	80
REX near Cedar Falls	APR-JUL	9.4	14.5	18.0	72	22	27	25
	APR-SEP	11.0	16.4	20	71	24	29	28
CEDAR RIVER at Cedar Falls	APR-JUL	24	41	53	72	65	82	74
	APR-SEP	24	41	52	71	63	80	73
SOUTH FORK TOLT near Index	APR-JUL	7.7	9.7	11.0	75	12.3	14.3	14.7
	APR-SEP	9.0	11.1	12.5	74	13.9	16.0	16.9

CENTRAL PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	4	20	30
TOLT RIVER	2	7	6
SNOQUALMIE RIVER	5	36	38
SKYKOMISH RIVER	3	35	44

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

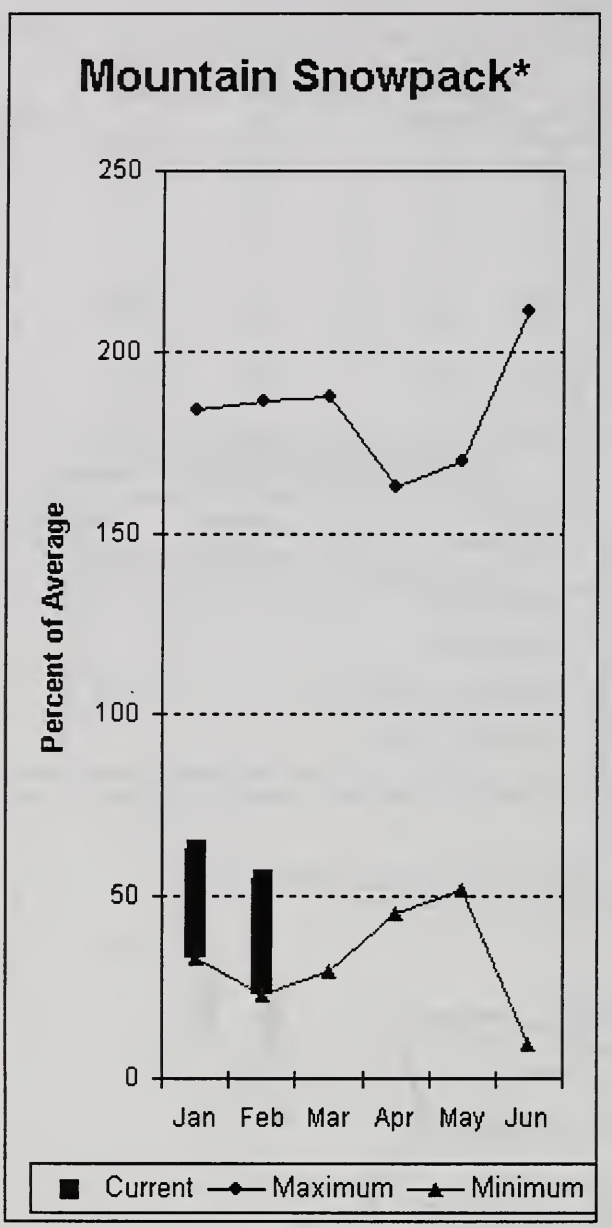
The average is computed for the 1971-2000 base period.

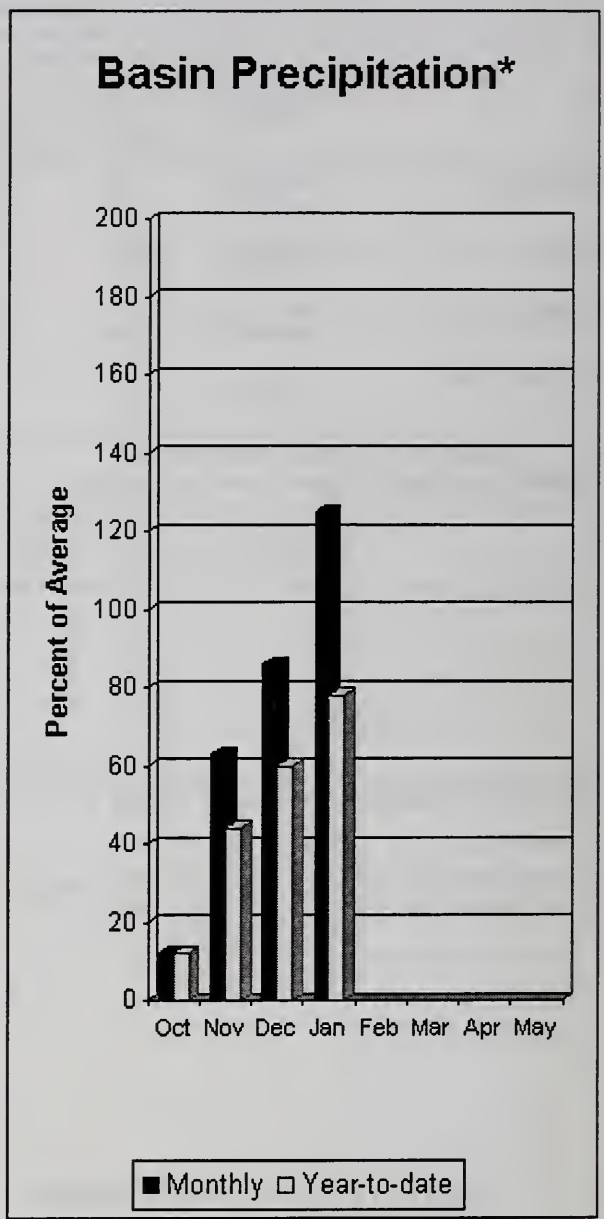
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Central Puget Sound Basins
Percent of Average
February 1, 2003

Snowpack - 30%
Precipitation - 72%

North Puget Sound River Basins





*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 72% of average for the spring and summer period. January streamflow in Skagit River was 124% of average. Other forecast points included Baker River at 71% and Thunder Creek at 77% of average. Basin-wide precipitation for January was 125% of average, bringing water-year-to-date to 78% of average. February 1 average snow cover in Skagit River Basin was 70%, Baker River Basin was 57% and Nooksack River Basin was 38%. Rainy Pass SNOTEL, at 4,780 feet, had 25.5 inches of water content. Average February 1 water content is 30.2 inches at Rainy Pass. February 1 Skagit River reservoir storage was 109% of average and 78% of capacity. Average January temperatures were 5 degrees above normal for the basin and 2 degrees above average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
THUNDER CREEK near Newhalem	APR-JUL	155	170	180	77	190	205	234
	APR-SEP	225	243	255	77	267	285	333
SKAGIT at Newhalem (2)	APR-JUL	1089	1226	1320	71	1414	1551	1864
	APR-SEP	1362	1504	1600	72	1696	1838	2217
BAKER RIVER near Concrete	APR-JUL	465	539	590	71	641	715	828
	APR-SEP	597	688	750	71	812	903	1050

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	1076.0	1021.9	978.3
DIABLO RESERVOIR	90.6	84.3	86.8	85.5
GORGE RESERVOIR		NO REPORT		

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
SKAGIT RIVER	12	62	69
BAKER RIVER	3	39	57
NOOKSACK RIVER	1	35	38

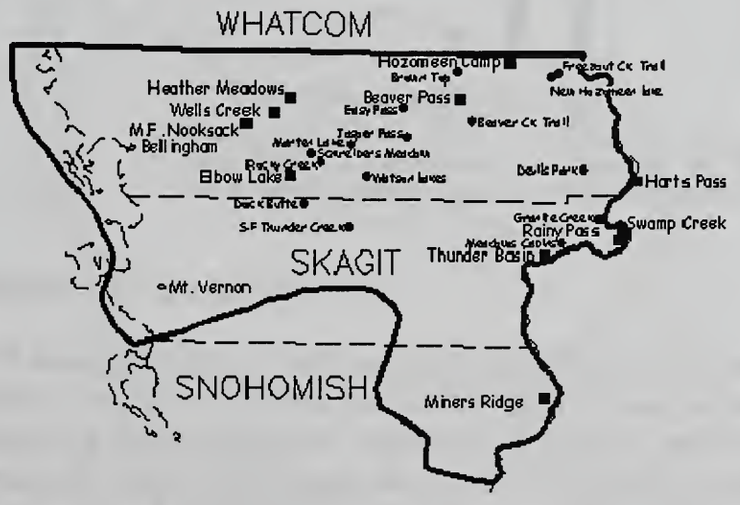
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

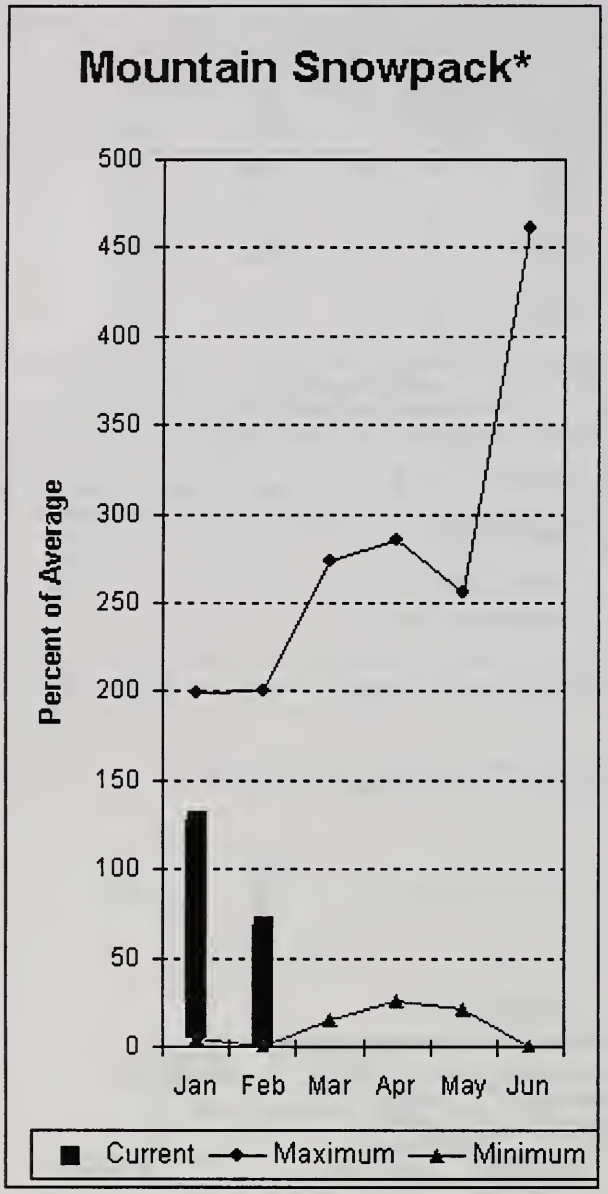
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

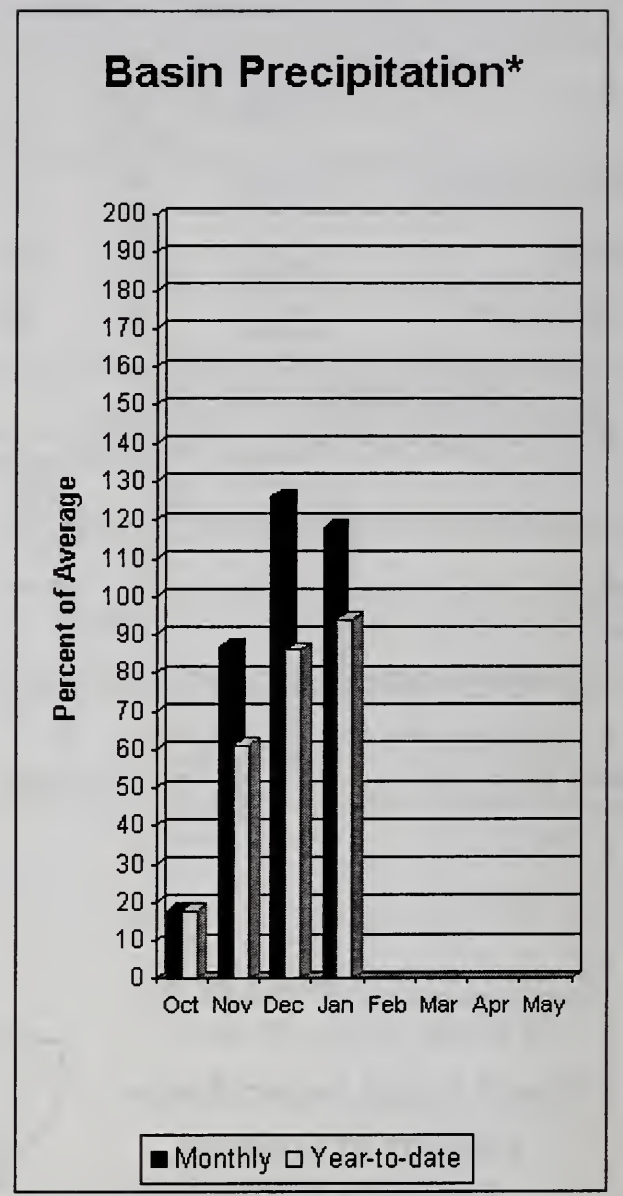
North Puget Sound Basins
Percent of Average
February 1, 2003

Snowpack - 55%
Precipitation - 78%
Reservoir Capacity - 109%



Olympic Peninsula River Basins





*Based on selected stations

Forecasted average runoff for streamflow in the Dungeness River and Elwha River basins is 80% and 78% respectively. Big Quilcene River should expect near average runoff this summer. January precipitation was 118% of average. Precipitation has accumulated at 94% of average for the water year. January precipitation at Quillayute was 12.96 inches. The thirty-year average for January is 13.65 inches. Olympic Peninsula snowpack averaged 68% of normal on February 1. Temperatures were 6 degrees above average for the month and 2-3 degrees above average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Olympic Peninsula River Basins

Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
DUNGENESS near Sequim	APR-SEP	105	115	122	80	129	139	152
	APR-JUL	87	95	100	81	105	113	124
ELWHA near Port Angeles	APR-SEP	323	363	390	78	417	457	503
	APR-JUL	278	309	330	79	351	382	419

OLYMPIC PENINSULA RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - February 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OLYMPIC PENINSULA	4	61	68
ELWHA RIVER	1	32	38
MORSE CREEK	1	56	65
DUNGENESS RIVER	1	66	70
QUILCENE RIVER	1	79	90
WYNOOCHEE RIVER	0	0	0

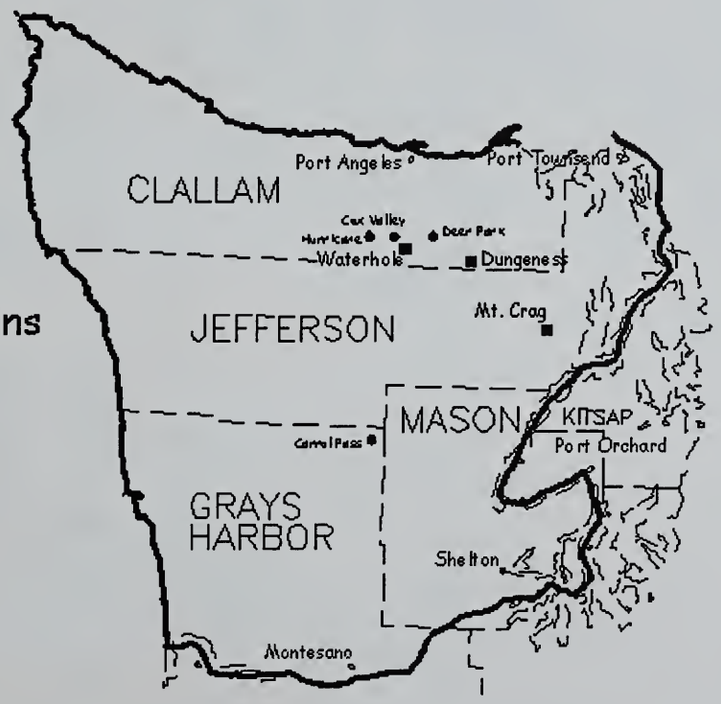
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Olympic Peninsula River Basins
Percent of Average
February 1, 2003

Snowpack - 68%
Precipitation - 94%



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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada

Ministry of Sustainable Resources
Snow Survey, River Forecast Centre, Victoria, British Columbia

State

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal

Department of the Army
- Corps of Engineers

U.S. Department of Agriculture
- Forest Service

U.S. Department of Commerce
- NOAA, National Weather Service

U.S. Department of Interior
- Bonneville Power Administration
- Bureau of Reclamation
- Geological Survey
- National Park Service
- Bureau of Indian Affairs

Local

City of Tacoma
City of Seattle
Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company
Snohomish County P.U.D.
Colville Confederated Tribes
Spokane County
Yakama Indian Nation
Whatcom County
Pierce County

Private

Okanogan Irrigation District
Wenatchee Heights Irrigation District
Newman Lake Homeowners Association
Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

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